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UniRef90 F 6 WVH 4 UniRef90_UPIO003F13A93 UniRef90-G3VYH9 UniRet90_S7MK65 UniRef90-UPIOOO2C6288E UniRef90-UPIOOO38EA0A7 UniRef90-K9WIF4 UniRef90_UPI000333246A UniRef90-13J6K5 UniRef90-H2SCC1 UniRef90_UPIO00479EA24 UniRef90_UP1000388D7D4 UniRef90-K7E1J4 UniRef90_UPIOOO3339071 UniRef90 UPIO003339233 UniRef90-E4T581 UniRef90-UPIO0042C6BFO UniRef90-UPI0002C4602E UniRef90 A7BPR1 UniRef90-F7CGZO UniRef90-UPIO003F0614F UniRef90_U31XC3 UniRef90 G1KR22 UniRef90-UPI0002D5ED25 UniRet90_-F7CZD2
UniRef90-D2HEM8 UniRef90-W5NVY5 UniRef90_F6SA30 UniRef90_UPIO00334661E UniRef90-UPI000069FA4A UniRet90_UPIo0033185AB UniRef90_UPIOOO2035841 UniRef90-W5LVW4 UniRef90 UPIOO034CF52E
UniRefgo-UniRef90-I3NE99 UniRef90-UPIo003C11FDE UniRef90-G1SWM4 UniRef90_H3AQGO
UniRef9O_G1KW



 LYVANTIFALNLFKQLINTNSTQNLFFSPWSISSSMMA
 LSAANGTFAGSLLKLLCQANPSGNVFFSPLSIISAALA NSLSAANTHFAFDLLQQFKTSKKDDNIFYSPLSILSALA SLSVSTNSFTLDLYKKLNETSKGQNIFFSPWSIATALA SSANNHFTLDLEHTLNEKNPTGNIFFSPFSIISCAAA ASGAAANAEFGFNLLREMDNSQGNENVFFSFLS:CTAGS

${ }^{5}$ SA F G F N
F $C$ L
F
 LS N KL kL VPANT
A S $\begin{array}{llll}\text { F } & A & R & R \\ F & A & L \\ N\end{array}$
$\qquad$

$\qquad$ SAA A A N A A S $\checkmark$ FAFREY | PTV |
| :---: |
| PS |
| S S |
| Q |



 1
 $\begin{array}{llllll}V & S & T & A & L & A \\ I & S & T & A & F & A\end{array}$ TAFA
TAFA



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\mathrm{HSS}
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LSDANMKF TLDGYQQLAGSKN
$\qquad$
A A A L S AANAEFFNL CORRETKD SSLSAANTRF SEANGDFADRLLKLLGGEDPADNVFYSPLSUSSSALA HKIAPSNADFAFRFYRQAASKAAGKNVFFSPVSISTAFA FSDANNEFALSLYGSMAEEVDDGNLFFSPISVSLALG SLQEGNGDFALKLLKTLSEDSSN NIFLSPISISAALT GS SLTANVEFCLDLYKQLNSNNAGDNDFFSPLSLDYALN LGAANVEFCLDVFKELSTKNLDTNGFFSPLSMLYAGAS SLSEANSRFATELYKQLAAKDHNENIFMSPLSSUSTAGA
 NTLSEANGAFALRLLKLLGQNDPERNVFYSPLSVSSALA NAKLDAANTRDSFKLFSALKQQPEQNIFDSPASVADALS SLGEANIKFTMDLFKQLRKEPESNVFYSPVSIMSALA LCKANTSFSLALFRKLSDNDTTANIFYSPGSISSALA
 PALSEANNTFALNFFKKIGEEESEENVFYSPLSLYYALT NPLSEANGTFALNLLKKLCETH SQNIFFSPVSISSALS SEANGAFALRLLKLLGQEDPARNVFFSPVSISSALG NEFAFDLLKQTIQSSGETNVFVSPLSVSUALGG $\square \mathrm{YKANA}$

A $A \square N$ S LA
 LSTANSAFALDTFLLLCKNDRTGNVFDSPYSVSSALG KLSKANSRFAVNFYKNLTSSRNTENVFMSPISISSTAFA HQVATSNGNFAFRLYKQLISERPDKNVFLSPLSISTTLA APASRDFAFDLYRALATAAPDQNVFFSPLSHSTMLA
 T FSCL



## QUERY

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UniRef90-D2HEM8
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UniRef90_F6SA30
UniRef90_UPIO00334661E
UniRef90_UPI000069FA4A
UniRef90_UPI00033185AB
UniRef90-UPIO002035841
UniRef90_UPI0002654206
UniRef90-UPI000265
UniRef90-W5LVW4
UniRef90-UPI00034CF52E
UniRef90-I3NE99
UniRef90_UPIO003C11FDE
UniRef90-G1SWM4
UniRef90-H3AQG0
UniRef90_G1KWY8 $M V F L G A K G N T A A Q M A K V L S L V K P E E I H D G Y Q S P G T K Y A L K$

 $M V Y L G S R G N T A D E M A K V L Q F N N V G V H K D P V T P K N F T G C E Y$ MLYAA A E GETK QQDQKTFHYPSPA LIMNQFNKPNPNYDLS LI R LGA RGDCAS QL D QPGLQA QLKRRLLYEDNSSHK GYEL S
 MTYLGAKENTAFEMEMALHFNEVTENTEVEKDGNVHHQFQ $M V H L G A K G D T A S Q M A E V L H F N Q T V R E E G S S E T T R P S P A R P$ LV LA GA K G N S A A QL S K A F H LD K I E E VQ C L N N K R D A S Y L LK $L$ L R L G S R G D C A Q Q i K Q S R L Q F Q L K N V L C D Dil N A S H K D Y E L R
 $M T Y N G V S G E T K Q E M T K V M T P Q E D N A A N Q G L Q N S L Q K D E P N$

 $M V$ SEGA R G N T A A QMS EV L F L K E VGGD H Q SF Q S S GTE Y FL R




 $M V S L G A R G N T A T M M S E V L H F D K D N D K V V E L N K E E S M Y E L D$ MTYNGAVGETQQAMAKAMELQGDTLANADLKAVLQNPDPK TVYEGAKGDTAA Q $V$ T QA LSSFSS GEGVHANFQSPSAS Y LIK $M T Y N G Q S G E T K Q E M T P K A D N A A N H N L Q K S L Q K D D P K V Q V S$ $M A Y N G A S G E T Q E A M L E G L S L D Q L N Q G N N A L K A S L E N A D P D$
 $M V V L G A R G N T E T Q L L K T L H F D V V E E L H S R F Q T L T S D I N R K$
 $M V Q L G A R G N T A E E M K K E T F P C C L Q C E E A G G A H S Q F Q C S G L$ $M T K G A C G D T L K Q L M D R D H F F F A K L N C R L Y K K A N K S S E E V$





 $M V F M G A K G M T A S Q M V Q T L S L D K C S G N G G G D N K T G T Q Y L L K$


 $M T K G G A C N N T Q K Q L M D Q V H F F F A K L N C R G Y R K A N K S S E V V$ $M$ LL GAR GNSAE QMEKCSSQTGRDDHQPDDSNYTQS LIA N RL Y
 $M T Y N G A K G E T Q Q A I A Q T L E L Q Q M S L E D D N Q T D T H L D D P K V Q$ MLLPGAAGDTAQQILVENVHHQFQKLLTKLNKSSDAYDLK $M L M L G A R G S T A T Q M S E C L K P Q T G E D D V H D L N K D D A P Y S L S$ $M V L L G A R G N T A A Q M S E V H H S N P A A D D K T S S S N P V C W W D C V$ MTYNGAGGSTQQAMLQGLSVPEDNSSNAALKVLLENPDPQ $M L T L G A K S T T L S Q I H K G L S F N L T E D E E R E I H E G F H H L D Q M$ $M V L E G A T G E T A E Q L Q Q V L S L S K N T D V H Q S F Q S F L A E V N K R$ $M V F M G A K G N T A A Q M S Q V D A H Q G F Q W L L D E V H K P S T Q Y L L R$
 $M$ M Y L G A R GNTA D QMAK A QAA A T L H S S F R S L N T S T G E YL L E $M L S L G A R S H T K T Q L L E G L G L S L Q E T P E E E L H K S F Q Q L L Q E$ MI YA GAKGETKLQMARALQFNTNQHDQHGFRELQKSFNNE LV RMGSRGDCAKQDDKVLHFQNEQGSSNSQNTSGNEYQLT
 $M V L L G A R G D T A A Q L S Q A L H F D M V K D V H S S F Q S H G A S C T G K$ $M T K L G A C G N T L Q Q L M D Q Q H F F F A K D N C R L Y K K D N K S A E L I$ MTYNGASGSTKEAMTKALEDQGLNLQQDNLKKLLENPDP K $M L S L G A R S A T L T Q M L E G L H F N L T Q U S E R E I H D G F Q H I I R T$ $M L A L G A R S H T K V Q L E G L G L S P Q E G S E E K L H N A S H E L L Q E$ $M V L L G A K G D T A A Q V A Q V L S L D T E T D F H Q D F Q Q P D T Q Y L L R$ $M L S L G A Q D S T L D E I K R G F H F R N M P E R H E G F H Y L I Y R M N Q E$








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UniRef90 F4XTN9 UniRef90-A0Ао23FM49 UniRef90-K7GA42 UniRef90-UPIOOO3F06066 UniRef90-H2SLS0 UniRef90_R7VQW0 UniRef90-H3B8H4 UniRef90-HOVI24 UniRef90_F6UWA6 UniRef90_UPIOOO3599C5B UniRef90-F6SWD3 UniRef90-BOCMA8
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UniRef90_G1KWY8

SRTVLWVSA DVPVRSSFRATM ${ }^{90}$
110
120
MHRDSDVTADFRTNPEG IANRLYGDKTCQLLTTFDDSCQEFYYAEVERVDFCGDAED SASYLFQDKTYTFLQKFLSSTSEFYQADLSAVDFANQPEV LANRLYGEKTYNFLSEFLDLTQKMYGAEDASVDFQNASED MQQTQKGPYPDA LDQEY: QLSKKYYSTEPQAVNFLECAEE TVNDLWMRQGLSPNQTYLDTVKRYYGGQVTNLDFEGSPDP IANGLFGDETCDILSTFQETCDQFYQAKLEQLSFATAADK SANRLFGEQSLNFNQTFQNDSQAVYNAKIDPVNFKNQPEQ
 LANGFYGEKTYHFLPDFLATLQKFYGADDASVDFQHASED IANGLFAEKEFDVNETY IAVKLAGEKNYQQGLTHKPACQNFYNAELGELSEAKAPEE I QVLIANSLWAQQGFSLKPEFLQTNQKYYNANLTELLNFSN LANRLYGEKTYHFRPDFLAT QKGYGVDLANVDFQHASEE TANRLFGEKTCEFLSTFKEACVQFYHAELEQLCFARAAEK
 LNNPDSQLQLNMGNADFLREKLKPKNLYDTEAFTTNFKDP I ANGLFAEKVFDFHKNFIGCAEKBYNAKVERDDFTDVED
I ANGLFAEKIFDTHKNYIACAKKLYDAKVERVDFTNDVED
TANRLYGSQTFEFLQSYLDGVKDIYQAGLETMDFLHASEE
TANRLYGEKTLEFLLPSFLESSQKSYHAGLEQMDFLHAWED
VQLAI A NS L WARQDFTLKPNFIQLNRQFYGAEVTNLNFTD
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IANALLVRQGFSLKPEFLQLNQQYYQANLTEVDFESPQEA
VANRMYAEQTFPVLDTYLSLLERDYGATVESVDFQNNYEK

ITANRLFGEVTFQF LQQYLDSTRALYQVELKAVNFFNAPEK SANKAYKDKSFQFDQEYVDNDKKFYLADVESVDFQTDAEG
 LNLTSNDLEDNMGNSLFVRKQMKLQEKFQGDLQRTNFKDS ANKLYGEKNFQFDQEYMDNDQKFYLTTVESVDFNNAAEE QANGLFGEESCQFLSSFEESCLQFYQAELEQLSFTKAPER UANRLFGRQDYVFDEAFLNECQENFMSQLEELDDFAEDTEG
 SDQLQLSMSNAMFLHEHLNLLEKFKEDAQALYGAEAFNTN AANRLFGEKSLIFNETYQDUSEVVYGAKLKPLNFKEDPEL TANRLFGEKTCEFLSTFKESCLQFYRAELEQLSFAQAAEQ ANGLFGEKSCKFLSSFQESCLQFYQAKVKQLPFAKAPER LSVANS DWARKGEPFVPEFLQKNQDFYGAK TDLDFNDPS IANRTYAEKKFQLLQKYLEDTQKFYRTNVERLDFVNAAEE LANRLYGDRSYTFLEEFLKGTKKHYKAELESVDFKENAEE SANRLYGEQSYQFVEDFLGSTKKHYRAELESVDFRAAAET LNRPDSEIQLINGGALFIDDQLKLLEKFLEDVKTLYFQNS VANALFGEKTCGFLSPFKESCQKFYFSNVEELDFAHMPEA TANRLFGERTYDFLSSFKDSCRTFYQADMEELDFANAAEK TANRLFGEESYKFLSSFQESCLKFYQAELEQLSFVKDPKK SANKLFGEKSARFKERYMQLSKKYYSTEPQAVDFLECAED LCRPRDGLQLSLGNADFTHPKLSDQDAFVSTMKMLY LADS IANG\|WVQKRMTLFAEFMETLYDFYGUVARTADFENATEID AANGIAEKVFDDHKNFIGCAEKLYNARVERVDFTNDVED QLSMGNALFUNNELKLRQKFLEDVTTFYDSEAISSDFQNS SANRLFGEKSLVFNETYQNDSEVVYGAKLWPLNFKEKPES VQLTHANSLWANKDASFNPDFLQTNRDFYTARVTNLVNTD LA QLRLGNALFSTPVHLQDTFVNAVKTLYGADTFPTNFG MANRVFGEKTCEFLSTFKESCLRFYCAELEQLSFAEAAEP SQDLDLDLKNTLFIDRKDQPQKQFLTDAKNLYDSDTVPTN DANGLFAEKVFDHHQNYTERAERLYNAKVERVDFTNDEED TANRAYGEKSFPFSEQYQLCQEQLYNATLESVDFKTKADD IATRLYGTKANAFQETYLNCSEKLYKARLQAVDFAHSTEE MGNVLFVLDRLKPQQRFLNNLREFYEGEVYPMNFKRSDQA AVNRLYSKAGYNFVQSFLEGTASYYGATVEAVDNFAAPDA SANRLFGEKSLAFNQTYQNDSEVVYGAKLMPLNFKEKPEL TADSDVQSLWVNQNTALKKEFIDNAKNFYQAEVANLDFFAN LISQLSLGNALFMDPTVSVQEGFLRAMKTMYQADIFPTNFG SNQLQLSVGNAMFVLEELKLLDKFKEDARVLYSSEAFSTN

UniRef90_K7F8N7 UniRef90_UPIO004571EEA UniRef90_UPIO004446A5B UniRef90_UPI00027403DF UniRef90-L9L9C5 UniRef90-UPIOOO28810E4 UniRef90_UPIO00333A902 UniRef90-UPIo00333BFE0 UniRef90-V9KEFO UniRef90-M3YYL6 UniRet90_UPIOOO395D488 UniRef90 UPIOOO3FOA2B3 UniRef90-HOV496 UniRef90-UPIo00273A09D UniRef90-K9VII9 UniRef90_UPIo003991BF8 UniRef90_UPIooo3FOD3C1 UniRef90-G1SN70 UniRet90_C3PT37 UniReffo -W5UBZ7 UniRef90 M7C271 UniRef90-UPIOOO3C25AOB UniRef90-B3RFC2 UniRef90-13M9T9 UniRef90-F7D289 UniRef90-UPIO00395928F UniRef90-C1BXP1 UniRef90-UPIO00329FFDE UniRef90-F5UFI4 UniRef90-F4XTN9 UniRef90-A0A023FM49 UniRef90-K7GA42 UniRef90-UPIOOO3F06066 UniRef90-H2SLS0 UniRef90-R7VQW0 UniRef90-H3B8H4 UniRef90-HOVI24 UniRef90-F6UWA6 UniRef90-UPIOOO3599C5B UniRef90-F6SWD3 UniRef90- BoCMA
UniRef90 D2HUT4 UniRef90-UPIOOO38EA6A3 UniRef90_UPIOOO3C2798E UniRef90-R7TM73 UniRef90-Q6P9U0 UniRef90-HOWCE8 UniRef90 ${ }^{-}$V8NV98
UniRef90 F 6 WVH 4 UniRef90-UPI0003F13A93 UniRef90-G3VYH9 UniRef90-S7MK65 UniRef90 UPIOOO2C6288E UniRef90-UPIOOO38EA0A7 UniRef90-K9WIF4 UniRef90_UPIo00333246A UniRef90-13J6K5 UniRef90-H2SCC1 UniRef90-UPIO00479EA24 UniRef90-UPI000388D7D4 UniRef90-K7E1J4 UniRef90-UPIOOO3339071 UniRef90_UPIO003339233 UniRef90_E4T581 UniRef90-UPIo0042C6BFO UniRef90-UPIO002C4602E UniRef90_A7BPR1 UniRef90 F7CGZO UniRef90-UPIIOOO3F0614F UniRef90_U31XC3 UniRef90_GBKF2 UniRef90-UPIOOO2D5ED25 UniRet90-D2HEM8 UniRef90 ${ }^{\text {D2HEM8 }}$
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UniRef9O_G1KW

130
140
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 A R K N I $N$ N S WV

TRHQI N Q WI QKNTHGKI K N L L Q E GS I S S S A VLVLVNAVYF


VRAC I N S WV V R K E I N Q W V K D Q T E G K I P D

 ARE KI NV WVVE N E T K G K I K D L F A A G F I D P S T V L V L V N A I Y F



##  

 $\begin{array}{llllll}L S & I & N & N & W & S \\ A & A & A & T & I & N\end{array}$VRHEVNAWVETAT NTN

##  <br> 

 S R R K A E I N K K Y IA L L T G D D M I K D Q Q



 S R K H I N T WVV S K K T E G K I Q Q Q L L A K D S L E E D C R L V L I M A V Y F





## 

## A


 S R E H I I N D W WV A E K T E G G $\quad$ N






 A D A L N I D N E WV N E N T S G K IVNK: V FKTVF QDNDHVRKETHGKIVDLVRELDRNSVMVLVNYIYF











## QUERY

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UniRef90_G1KWY8

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190
200
KARWT TPFEAHLLTREGTFRTPRGPKRDPFMHRTKTMPYAT K GNWATPFDKEMEFKDNKDESKPVQMMFKRDEFKMGYDAD K GSWEHKFNET DT LVVKPFRLLNKGQSKPVNMMYQEADLYST K GDWF MPFSMEKTYKSKFRLLNKVVTKPVQMMFQKNYFHHA K GNWQNQFLKEATANVPFRLNKKDTKTVKMMYQKKKFPDG K GK WK TPFEKK LN GLYPFRTHR DP VQMMY LHGK LN DGY IE K GD WK SAFAGSYKSDF DDYD GNDSAVKMMTKTANFGYTED A GKEVPLMHQEQKFNLS DQ
 K GQWDNKFDKEKEFWLDNKTSKPVQMMKQQNVFKFTSGED
 K GK WQK LFPDETKEAQFHLNKKDKKTVVMMCQVDDFSYGY K GK WK TKRDT DK CHFKSPKCSKQVVPMMHQERRFNLT TDQ K GKWNEQFKENYTREMFFKTRKNEQMMFKEATFKMTYUKE K GNWKTPFDKSQTNKTFSLTDGSSKQHPMMSQKGNFWYYE K GK WAVEFKKKEDTKTYF QLNKNEKRPVQMMFQEGYFNMA K GK WQERF LEK YT TE QFHL NKKDNKMVKMMYQMTDFPYGY K GRWDSKFYKRCTKEMPFKIDQRPVQMMYQESKFKMSYVSE K GKWDEQFDRKCTRGMPFKIIKQEKKTVVQMMFKEAEFNLGY

 K GKWESAFTTKRDCHERSSPKCPRKAAVSMMHQEQKFNMSVIS K G Q WESAAFTKNNCRFNSPKCPGKPVAMMHQERKFNLSTIR K GK WA MKFKPENT QRNFRTNKD DSRPVQMMKQSGFFNIGN K GNWE EQFDKQSTSERPFQDNKNETRPVQMMHFNMTYI GD K S N WDR DF QTSSTTMAMM K L N K N Q S K P V K M M H Q K D Y F P L T F K GAWS QPFDPKT Q NKPFYRAQGDNRPVPMMSLQEDLSYLS K GNWRNPFKEANTKEMPFEDRQNEQMMYQRKKLPYNY IDA K GNWETPFDQSKTNKTFY LTDDSSSKQHPMMSQMGSYRCYE K GSWT REFDKNKTSNQPFYDSGQKQHPMMYQYGKYKYYEN K GLWWSSQFNPNSTHRSDFHTKKEVDMMYQNNDYKMSRSDE K GSWAEKFKKEMQFRDNKKEKKPVQMMYQKEKFPFGY ISE V W WL H E F DP K LTTQEED F MLDDDN K Y V K V P M M F R G GL Y K V G H K GQWATKFKEKNTRKMPFRLNKREHRNVLMMHQTGEYKDA



 K GKWQSAFSKSNCHFRSPKCSGKAVAMMHQERKFNLSVIN GQWDTKFDKKNTVEKEFWLNKDTSKPVQMMKQHNVFKFTS K GRWE E QFREYRTRTMPFKI SQKEQKPVQMMFQKATHVSE
 K L N K K
 K G H WK SKFP LENTKMEPFFRANAEPCVVP $\square M Y Q E M T F H Y A$ K GKWESRF LK S Q TVETPFHLSKGRQMMHQSGRFKMASVEE K A K WQSPFDPQDTYKSKFRVSKRKTVNDPMMNDEPYFRDE

 K GLWT TPFDKTKTQELPFTLLDGTQQPIMFQQAQYGYYAN K GLWN EKFEKKHTKEEKFWLVNKDTSKPVQMMKQTNHFKLA K A HHKLRLTRTNCVVT FQNDTKPVKMMHQKSKFPFAT DPE K GNWDKQFKEKATRDATFHDSKNSTKPDKMMQQTSEPPFT K GKWNNEFDKQQTQYPFY TS GSQKQHPMMSQKGKYKYYE K A H WENPFSNLFTKEDDFFVDAKTSVKVNMMNSDKTYNTH NGKWEKPFDKEKMFNDSEKKQKPVQMMYQRSTGSMTEDED
 K GWWEKPEVKS $\square T R E M P F K \square N Q K E Q R L V Q M M F R R W S R V S E$ K G $\square$ WRK HFETKNTTENFTNELGKAVKVNMMYQKDTFSYAQ
 KAKWETSF KGKWQNPF K GKWD GAF
K GQWESAF
K GYWE QP F K K S T CFKS PQCPGKEVLMMHQEQKFNLSVVK K GMWDEKFKSFHTKDDDF FVVDAKNSVKVKMMHQSK』HNUH
 K GS WTNEFDKQQTEYPFYDTS GKQKQHSMMSQSGDYRYYE KAKWQKPFDAK QTAEEDFFVNEKTVVSVPMMKQKDVYHYY KAKWEASFDHKSTRKQDFHVTSETVVQVPMMRREDHYYYF R G R WS E EFDK A Y TKE MPFRIN QKE QRPVPMMFQDRER DK E RARWQHEFDPKATKEEDF ILDGGKRVKVPMMFHGGMYYDR K GKWEAAFAESNCHFKSPKCPGKTVAMMHQERKFNDSVIQ RARWQQEFDPKETKEEDFDMDGNKTAKVPMMSHGGMYRDD K G S WK K QF K K E NTTDAPF FLLNKNDKTSVVKMMSQKGKYSNP K GRWEHQFQRETVKKPFHLPGGKSVIVVMMYQ G TVFKLAF WEKPFNPQYTKK EKFF VDGNKAVEVPMMFGIGAFKHGYDE K G N WES K F R VENTTQETFKVFDERKKVPVSLMSQEDEFDT K GQWMNKFEKESVFKADFHKTDKESCSVSMMYQENKFRYK K G S WT NKFPNSTTEQSFQ TNPNVS DPKMMMSQTGNYRYYA K A K WE T GF S P E NTKE QD F HVVNWDTMVKVVSMMNRED QYYY F K A R WQ $\square P F D P K R T Q Q A E F H V S E N E T V Q V P M M K \square A L V I P Y F$ K GQWQNKF QRETVVKAP QLNE GRSVLVEMMYQMGTFKLAV K GF WEHPFNQSSDT E E DF FVVNA DT TVVKVNMMF QSSHY K YL H

## QUERY

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UniRef90-W5UBZ7
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UniRef90_F4XTN9
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UniRef90_H3AQG0
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## 

A R GWRMVT 210
220
ARGWRMVTLHAHDELAVDVLLPP GTNAAAVPTAPLLTALH


 D LIK A QI L L E L P Y A G L V


[








T
T
D
L
L RNGSSIIMDPYKGNTS
RRQEMTPYTGKEFS
DNVHVLEMPYKGEDTSMVLLLPLKGVDLASVEQDFTMEKM LEAVQAKMPYKGKALSMVVLLPDKEVVGLASVEQDFTMEKL





 | $S$ | $K$ | $V$ | $Q$ | $V$ | $Q$ | $L$ | $P$ | $Y$ | $E$ | $G$ | $D$ | $D$ | $I$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $T$ | $M$ |  |  |  |  |  |  |  |  |  |  |  |
| $P$ | $Q$ | $Q$ | $V$ | $I$ | $E$ | $L$ | $P$ | $Y$ | $V$ | $Q$ | $K$ | $N$ | $L$ | $H$ HQVE V L E




 NEQFQAVS LD YGKK I HDECWVVED YKGNA

1 S T Q L L M L P Y VGGRE L N M I I ML P P





## N


LDRCKVVGVP Y G N ATAFFIL P

 I K E P E MRVP Y VS NRLS
 $N E Q R$ Q A V R L



## QUERY

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UniRef90 G1SWM4 UniRef90_G1SWM4 UniRef90_H3AQG0
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250
260
270
280

## RRSASTSVELA

260
270
 DNMKDTLVEVKLPQFKLEETYDLNKVLSSMGMADAFDDKK E HLDVTEVKVGLPRFKLEDSYVLNTNLARLGVEDLINDSK DTMTEDDVEVYMPQFKLEEHYELKSVLASMGMNDAFNKGQ HNMKDKAVDLQLPKFKMEQDYKMDELLAEMGMPDAFGSRA RKMKFQYVEVFLPQFKDEKNYEDKNYLKALGLKDVFDESK A A WTKPECRRSTPRFRLEENYDMDSVLQTLGVVDVFHQGK
 DNMMKAEVDLYLPKLKLEENYDLKSPLSSMGIRNAFDPGQ NNDKVDKMEVRVPRFKLEESYNLKSHLAHLDVQDDFNPSK RKMKSQYVEVFLPKFKI DKKYEMKNYLEALGLKDIFDEKA



 E CMK S TE V E V F L $\begin{array}{llllllll}\text { E K M T K S K } & V & Q & V & F \\ K & W M & S & E & R & N & G & I\end{array}$
$\qquad$
GS MK E I L L S V $\underset{\text { E S LI }}{\text { G }}$
 R K M T S Q Y
ENMACKEVHLRF K M MEST NVVQVSLLPRRFK LEE T
 NMEVVHSEV L L HLPPK F K L E E D Y E L N D P L T K L G M K N V F CA G R N K WM Q E F R M I E I P R F K M E Y E V Q L K D T L I A L G M A E F F G G K T




 Q N M R E R LV D L Y L $\operatorname{L}$ P R F K V E D S Y D L K D T L M S M G IV D A F S E W D
 N QLRRRRHM\| L I I F
R R MTSKYVEVFFP
E NMSDNFVDLY L P R F K
E HM K K T K V E V F LiP R F K L E E T Y N L K D T L R A L G M V DV F S A Q R

T E L F E Q R V K V A L
D M L D E E E V

| S N M M E R E | $V$ | $E$ | $V$ | $H$ | $P$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| R A L L E E V S | L | S | $V$ | $H$ | $L$ |

D N MTERDVDI Q FP
, E S L Q E T L L L A A A

| S | $M$ | $E$ | $R$ | $N$ | $V$ | $E$ | $V$ | $H$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $D$ | $M$ | $K$ | $S$ | $T$ | $E$ | $V$ | $E$ | $V$ |
| $F$ | $L$ |  |  |  |  |  |  |  |

E H M K R T E E V Q A MGEREVHLS I P
DAMSR PRFKVE
E M M K E V E V Q V Glimp R F K M E E K C N M K N
S Q F S Q Q E GF I R L P R F K M D Y E V T LiN NAL KV L GM GEA F T N Q A $K$ S LQ E R K I Y L Y I P DF S V S G T Y DV K D L F E K M G VI D VF T D K A
 E K M D T R E V V $\operatorname{D}$ V $\operatorname{V}$ F L K GFFTS R R R S F D T M A E D K M F R K R QL Q L $Y$ L
 $K$ NSHDPSEVVYLPKFKTESAFSLQEPLQTLGMTDAFDSKA Q R M K L Q S V E V F V P R K M S F R Y V D L F L P R F K N WS QRRP I E L Y L
E NLK T IIEVNV QLPRRKL N A L L K T A N P A $V$ V TQFSKHEGFVRL

S S Y F Y R K L E L H F K MFAKRQLE Y A LPKFS\|S | $D$ | $S$ | $M$ | $K$ | $K$ | $T$ | $Q$ | $V$ | $A$ | $V$ | $F$ | $L$ | $P$ | $K$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | $R K M S S Q V V E$

 L V S K S N S V N L Y L
DTMMKE ITVVA T Q I




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UniRef90_H3AQG0
UniRef90_G1KWY8 A

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D

DLS GTS TVP ${ }^{290}$
300
$R$ LD R E G A E GA
310
310
320
DLSMSAKNDLVTV
$D L S G M S A K N D L V S E A V H K S F V E V N E E G T E A A A A T G V A F M F$
$D F S G M T G K N D F L S K V V H K S F V E V N E E G T E A A A A T S V V F M$ SDFSGMNKDLFLSSVSHKAFVEVNEKGTEAAASTQMRF
 ADLS GDGGRLYLSKLAHKSYI EVSEEGTEAASTTGTNVV
 ADFTGMSGTKKFV

 D LS G IS S K K DGVV S


GIVA EG R T DLLVVVS DA F H K A A

DLSGMSGARNFLS
D S G S P H R S KV GEAAFHKAKL K V E

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A DL S GINGKKYVTEVVHKAFIQVDE

(2 4
ADLS GMSPAKYVS

ADFSGUSHDLVV
DFSGMSPANEIV D LS GU G G H S A K KIV
$N L$ S Gll T E E N I ll I S
A DLLS GIIA S R L Y L S K I M H K S F V V I I N E
 D GITEXRRVKGVHKAVLDI GE A DFSGMSPGRCLS D LT RIIAPHQSKVGKAVHKAVVEVM ADLSGIAERLY SKLMHKSYIEV

D L S G IT G G R N K VV S Q V V H S A V L D D V D E E G
A DLSSGMTGKM HV S E VI HK S F V V E V N E E G T E
E
a A A SGAQ
EAAAAATGWLVV
$E A A A A A T S V Q L V$
$E A A A A A T S V V V S L$ E A

 | $T$ | $E$ | $A$ | $A$ | $S$ | $S$ | $T$ | $V$ | $V$ | $D$ | $F$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $T$ | $E$ | $A$ | $A$ | $A$ | $V$ | $A$ | $G$ | $M$ | $I$ | $V$ |
|  | $M$ |  |  |  |  |  |  |  |  |  |
| $T$ | $E$ | $A$ | $A$ | $A$ | $A$ | $S$ | $V$ | $V$ | $E$ | $F$ |
|  | $V$ | $F$ |  |  |  |  |  |  |  |  | E A VA A T G S T IT M

E A A T G $\begin{array}{lll}A & A & A \\ A & T & T V V \\ A & \text { A } & \text { G } \\ \text { A }\end{array}$
 $\begin{array}{lllllllll} & \text { E A A A A } & \text { G } & D & N & F & V \\ E & A & T & A & A & S & A & M & V \\ V & V\end{array}$ $A V A-V T C T V V L V$
$A$

$A$ A A A A T | A A A A | $G$ | $Q$ | $\square$ |
| :--- | :--- | :--- | :--- |



 |  | $A$ | $A$ | $A$ | $A$ | $A$ |
| :--- | :--- | :--- | :--- | :--- | :--- |

 K A A A A T GTVDMF E A A A A T TVI $\left.\begin{array}{lllllllll}E & A & A & S & A & T & G & S & V \\ E & V \\ E & A & A & T & T & G & T & N & V \\ E & A & A & A & V & T & M & M & E \\ L & I \\ E & A & A & A & T & A & S & A & V\end{array}\right) F$
 EA S A A T S L G TVVF E A A A A S A VI
$E A T A A A G N N \square V$
$E A A A G S G A Q$
$E A A A A T G \square G \square T V$





E

E A A A VT VI Q F V


## UniRef90_F1SCD0

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 MLALGAKGNTHSQYSTQTPDQVNEGYEHLLHMLGHSQDEM MVYMGARDNTEYQMEKALHFDKDAGLGGAAQTKCGKSMNH ICYEGAENTTKEQQSNVFYFPTNKRUNDRDNSGSGDYELQ FLSLGAHSSTLEEILEGLTFNDHRGFRHLLRMLSQPGDQL $M V F M G A K G N T A T Q M S Q C M V M H Q K K A T Q M C T N K S G T Q Y L L R$
$M$ MVFLGTRGNTAAQLSKTFHFDAVEDVHSRFQSRGASHILKK MVYLGTRGATASQMAQDEDHSDFQKLIAEDNNSSNANILK MAYQGADTTTKDGMTDDEINQSYRAHLDYFKKDYPQUEL D MVYLGARGDTAAEMERVLSLSSVSDVHSHFNSPSASYUL R

 MVYLGAKSSTAAQVAKTLHEDEVKDVBRFQSRGASYULK

 LVRLGARGDCAHQIDKTLYFNTASEHRNSSRNQHKDYELR MTYLGARGNTASQMQKVLHHHHFQKLLTE LLKKSTDAYELS
 MLSLGAGSSTKMQPQESLEEEMHRAFQQLLQELNQPRDAS MTYAGAEGNTYKQMNNEEFNEYFAK LQQEVSQPNEGYQLS $M T Q L G A R G K T A S D M S A T L Q W N A N S E Q A D H D Q Q P C D K Y Q L$
$M V L L G A K G N T A T Q M A Q A L S L D T E E D I H R G F Q S P G T Q Y L L$
$R$ MVLLGAKGNTASQIVQALALNAEEDUHGGFQSLLAQVHRI MLALGAKSATLNQIHKGLTFDLNKTQEKEDHEGFCHLICA FVALGARNTTLREILQGLKFNLRETSETQIHQSFQHLLNT MVRMGAEGPTAAEI DTGLNMKFNNQQDLVNNFHYENSNIL MLSMAAKGDTYNQI LRADQADLIPEDFRQLEANDTQNQDL MLQLGAKGNTEKQIEKVLQFNETTKKTTEKSAHCHDEENV MLALGARSATQSQULEGLAFNLTEDQEKEDHEGFHNLIHM $M V Y$ G GAKGDTAAQMAQALSFSSGEGVHADFQKLNADINSP $M$ TSLGAREHTASEDQKVLHHHQFQTLDTELKKPTDAYELN $M V L L G A K G D T A V Q I C Q D V H Q G F Q L L L H N L N K Q N N Q K Y C L T$ MTYEGARGTTADEMRTVLHREGFSADDAGLNHGDANYTGR $M T K G A C D N T L K Q L M D Q V H F F F A K L N C R L Y R K A N K S S E L V$
$M V Y G G T K N T T A A Q M A Q V L Q F N R D Q D F K Y S P E S E K K R K M E C$ $M V Y$ G TKGNTAAQMAQVEIHSDFQTHTEELLKK GSSYILK MVFLGTKGKTAEQMSKTLHFNFQTLNAEDNKKDVSTYALN $M V Y L G T K G S T A A Q V A Q V L Q F N R D Q D M K C P E N E K K R K M E F N$
$M T K G A C D N T L K Q L M N Q L H F F F A K L N C R D Y R K A N K S S E V V$
 $M V Y L G T G G T T A A Q M A Q V L Q F S R D Q D D K T C P E S E K K R K M E F$ MTYNGASGSTQKAMAKTLELQGDSLPYASLNKLLQNPGEN $M L Y N G A G G E T Q Q A M A K T L E V Q G U S L Q D \square N N T L T N P D A N V Q$ MIYAGAGGSSEEELSKVLGQAGFGLTDRDAGTNSGNVTLD
 MLS

 $M T Q P G A R G D T A T Q D A D V F R F N Q D D Q D Q L H L Y Q T N Y D S Q D H$ MAYNGAGGETQVAI LQQLDDDQLNAGNQALTQYDTQLDPE $L A S L G A R N T T L V E I L H G L K F N M H R G F Q H I L R D L R Q P D E Q L$
$M V Y G G A G G D T A D Q M A Q V L Q F N K V G D H G L V P V S Q K N F T G C N$ MLAL GARSATQSQULEGLAFNDTEDQEEEIHEGFQNLIHM MLDL GARGNTALQMEKVLHFNWKKLNVRMLKAGESGNVHQ MVLLGAKGNTAAQMAQVLSGNTAKDDCHWSFRSAGTQYLLER


 FLSLGARGTTQMEILNGLKFNLTETSEAEIHQAFQHLLFV $M V L L G A K G S T A T Q M A Q A L A D D T E E D D H S G F Q L L L A Q V H R P$ $M L S G G T K G V T H T Q L L E G L G F N V H K G F H N L L Q T F N R P D N E L$ $M L S L G A R S H T K T Q L L E G L G L N P Q K T P E E K L H K S F Q Q L L Q E$ MVYLGARGNTADQMARVLQFNKVGAYEANRGTPWNFTGCE LLLCLGAQDSTLAEDKKGFNFTGMSERHQAFRHVLHKLNRE $\bar{M} V Y L G T G S T T A A Q M A Q V L H H S H F Q T L I S E D N N P S T S Y V L K$ MTYNGAADGTKEEMAAVLHADGMETGELNGSYASFLNMAE $M \square S L G T Q G T V R T Q \square L E G L G F N D T E M P E S E I H K C F Q H L L Y K$ $M T Y V G A K G N T A T Q M A E V L H F K K T T G T G G C L Q K P Q T S Y L L K$
$M V Y L G S R K R T A S E D Q K V L H F N E Q N K R N H K L N K P T D A Y K L S ~$ MLS TGAKGETHRQMFA SNQMQANDAYRHLFHMVEHSQGNQ LLADGAKSETHDEDEEKEDHEGFHQLLYVLNQPNNKAQVN $M V L L G A R G K S A E Q M E K V L H Y D N F$
MAFVGARGNTADEMRQEDVPDSFYQAFQLLKSDQS GDKFY $F L S L G A Q G T T L T E D L E G L K F N D H R G F Q H L L R T L R Q P S N E L$


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L LQL N VGNAMFVVDEHLLKLDDEFRQDAQAKFASDVFSTNFK VANRLFAENTCELIPAFKESCLQFYDS GME QLSFVKAPE E


 $\square A N R L Y A E K T S S S L P D Y L K C V V K L Y R T G L E M V N F K T A S D R$
 QLRMGNAMFVKEQLQVLAKFKEGAQALDYAQAATTNFQHP




 TA NALWA E ETYP F LQQ Y DETA GRYYSANVTNNDDFTTAQPEA LLAN R L Y G E K T Y N N F L P E F L L S S T Q K M Y G A E L A S Vid F QRA S E D




 TA N R L F G E K S Y D F L S S S F K D S C C K F F Y Q A E M E E LLD F L N A T E D
 SAAN K L F F V K E G F D L K E S Y L N

$\stackrel{L}{\mathrm{~L}}$

FN H T G D K M N L F L L E E S L M L L E K F K E D A Q E L Y R A D I I P V N F H QMANKMY $\square$ MEDFEVQETLNNLLANKF LTTSAENLNFTQNDM $\square L A R G S A M F V H Q Q F E \square D K D F S E Q \square K K F F N S D D M N \square D F S K T$ HE QF QK LMT QF P F V Q TF L E D I K E YY Q A NVESSLD F E H A A E E L N H M M N A -F VT E K L K L L R K F L D D A K A L Y Q L E A F T T D F N K P SAS Y I Y GENTAHF L P DFLLEATQKYYQADLKADVFVAAPEA

 TANALWAEKTHQFLPEYDDVAEHWYSANATNDDDDDNPK G S A N R L F G DK S LTT F NETY QDUS EVVY GA K LQ P L D F K Q N A E Q





 SAS KKLFGEKKSAK FRE EY I QLLCKK YY S T E P Q A V D F LDE HA E E
 TA NALW WAE ETYP FLLPEYVVDTAARWY GANATNLLDFA GDSEG MANRLGAE TTYEFLPTFKESCDRFYHSELEQLSFAKAPEK $\square G N T L F D D Q K L Q P Q S K F L E D A E N F Y S A E T D P T N F Q N L E N T$


 SAN R V Y G EK E F Q F L Q E Y L D G I K K F Y L A T V ES L D F K N A A E E
 QE F L K Q T S S C Y N A E L E S S V D F R N K Y E E A R

 TANRLF GEESCQFLSPFQQQSCLGSYQAELEQLPFAKAPES



 L N L N NK K HELLKVGNSVVGDSQLKPLHEWHGIKEYYGATTG TA N R LYE E Q TFQQFHS GY I EFVVKNYYHA EPQAVNFKKAA E Q
 LG N GLF I E P S Q K F LP A FLD D A K NL Y GADGFS TNN F S NP

 S A N R $\square Y$ V $V$ K T Y A L L P T Y L QL $C$ S K Y Y K

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 SRQIINEWVANKTERRITEVIPESGI DDLTVLVLVNTIYF E VAVQEDNKY DAKKTKDMDTDMVKTLDQQTVMMLI NYI YF


 $\square R E E I N S W V A S Q T E G K I L N L L P D D A V D S A T R M I L V N A L Y F$


 A RKMINEWVKGQTEGKIPELLAA GVVDNTTKLVLVNAIYF TRKQUNEWVETFTKGKIKDLFAQGALSGDTKLVLVNAVYF EATQKQDNDYVHQKTHGK ISNLIKRI DSGTVMLLI NYIYF ARDAVNAWVE ETTKSK DKDLLASGVVGCDTALVLVNAIYF
 SQKMI NSWVESQTNGRIKNLFPQNSLNSSVLVLVNAVYFK SRKHINTWVAKKTEDKI TELLSPGSLDKDTKLVLVNAIYF SRKMUNSWVESQTNERUKDLFPKDS LDDS STVLVLVNAVYF ANEDNE WVENQTNSK TTNL LDVRADMFTPLTRMIMI NAI YF ERTNINSWVSEQTQNKINDLLPRGAVDALTRMVLVNAI YF SREHINTWVSKKTEGKI EELLEPGSSI DAETREVLVNAVYF FSSDFNNSTYDEKKTHGKIVDLVQDLDPLTVMILINYVFF
 EASKTTIDNDYVKMKTNEKVMGLASQQIDPLTRMVLVNA LIF SEKK
 SRSPKVMWVWKOTNGKIPDLLSKDSVNSQTRLYLANALYF SRMT NQWVEGETEDRIVDLLPPGSVDTLTRLVINAVYF
 ARKEDNKWVSEQTKGKIPEVGSTGTVDRSTKMVLVNAGYF SRMTINNWIANKTEGRITTDVIPQDAINEFTVLVLVNTIYF EDTRRQINDYINQKTQGKINNLIKNIDPGTVIMLLTNCIFF VAAVNTIMSWVKENTKGKDDKIVDNI EPNQALFELINALYFF VQSEVNKWVSQKTRGKIPSIVDNGFPM NTVMFLLNAVYF ARKKINSWVETQTKGKISKLLPQGSVDGDTRMVLVNAVYF EGAKKQUNDYVDKKTHGKDPELLKSLDASTVMFLINY:FF SRKHINMWVSKQTKGKIDELLSDDSDDLETRLVLVNTLYF QKQUNDFISH KTHGKINNLDKNDDPGTVMLLTNYIFF DAANKDNDWVADSTKNKIKKIIEPPISADVSMYLINAVYF PAAVDRDNDWVKQHTRDRDPTVVDQLPADQLLVLVNAVYF TAAEQLINDFVKKETQGKLLELVKGLDQGTMLVLVNYIVF
 ARDTINDWISNKTENRIKDTLPSGVLDSNTVLVLVNTIYF SRRHINTWVSKKTEGKIRELLLPDNSI DTQTKLLVLVNAIYF DQCVSDADSLQFCHYFMYHHLLLPDKIKDLVLVLVNA:YF AREKINAWVKTQTKGKIGNLLPEGSVDEETRMVEVNAVYF DQANFRDNDYVERKSHGKIQDLDSSLDPETTIILVNAIFF SRRHПNAWVSTKTQDKDKELLAKNATDGVCRLVLTSAVYF EEAKKVINGFVEKGTQGKIVDLVKDLDKDTVLALVNYIFF DPVGAKKQ EHTQKEDNEYDSQKTHGRIKNLINSI DPGTVMLLVNYVYF胃RKEDNSWVESQQEGKGRNLLPDNAVDSATVMLVEVNALYF PINFFTNFFTSNKYMRKQIYGEIQDFNQDTVLMLVNYVYF VRKETNSWVESQTEGKIQNLLPRGSVDPNTALVLVNAIYF TRKMUNSWVESQTNEKGKDLFPKGSLNRSTVLVLVNAIYF SVAKKQIDYYVQNKTNGKISSALNELDPNAVMVLVNYIFF TRKSINTWVENKTNGKVTNLFGKGTIDPSSUMVLVSAIYF VKEMVNKWVSNITHNKLTS LIDKPLSPLSRLFLLNAVYF ARKK NSWVKTQTKGKIPNLDPEGSVDGDTRMVLVNAVYF

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200 KGRWHQQFHKDCTMEMPFKINKKEKRPVQMMCREDTFHDA K G $\square W E S A F S K S \square R R F K S P K C P G K A V R M M H Q E R K F N D S V I Q$ RGKWNEQFDRKYTRGMPFKTGKEKKTVQMMFKHAQFNLGY K GHWKSQFPPNTKLDVFHKASGETCQVPTMYQESKFHHAF RGKWEKPFEVEHTHKADFNVDENTKVSVDMMKRTGRYDFY KGDWKTAFKQEDTREFPFSMTKQEQMMCQNSTFK DGFVPS NGKWAYTFDKQDTEKRAFYPANGEEASVDMMYMYNNFNYG K GK WKTPFDPRDTFESEFY DSRKQSVKVPMMKVEPYFWDE KGKWNEQFDRKHTRGMPFKTNQQEQMMFKQARFHVGYVDA K GQWQNKFQRET $\square K T P F Q L S E G K S V I V E M M Y Q T G T F K L A F$ K GMWREKFRKKDTTDAPFRLNKKDKMMYQKEKFPFGYIRD KGSWEHPF LVQDTTEKPFRINKTTSKPVQMMSTKKK LQVF NGSWTDKFDITQTTNYFTNIKGEKELVPMMNRTGKYKYAQ K GKWTHKYTREMAFKDNQKESHPVRMMHQLNKDPFRCDPE K GQWKKEDTREEQFWLNKTTSKPVQMMKQRHSFNFTYLEG K GLWWS KFSPDSTKQEPFHKANKEKCLVSMMYQESKFRYR K GTWVKQFDENKTVEAEFRKGPGESVLVPMMQRAVYGYAE K GHWQWKFDEKNTVEEKFWLNKDTQMMKQTSSFKFTELED KGKWQEQFREEATTEAPFRLSKKDTKVVKMMYQKKKY I ED KGQWAEEFKKENTKETPFHINKPDQMMNHRGEYNDAT ZE RARWKHEFDPKQTREEDFMLGQNKSVKVPMMFQGGMFYDN K G L WK TQFNPKVTSDQEFYTSKELSKQVHMMYKQSHFKDN K GKWKRPFNPEHTRDADFHVDKSTTVKVPMMNMFDMHYCS KGKWKSAFLKKDHHFKSPKCSKQVVPMMHQERRFNLSMIS GQWQEEFKKENTVEEKFWLNKDTSKPVQMMKQTNHFKFVS KGNWDTQFDKELTQERPFNEEKPVQMMFQKSTFKMSYIGE KGQWNQKFKEEHKFWDNKDTSKPVQMMKQSDSFKFVSLED K AKWE I SFSHKNTHEQDFHVTPETVVRIVPMMNSEDQYYY L K GTWSNVIF S ESRTRKKTFYEADTRQVDMMSDKEDFPYY E N KGKWDEEFNPNLTRPDPFKVSPSNTKDVPMMFAKRKFAFF KGKWDEQFDETYTREMPFKIKQEEQRPVQMMYQEATHVGE K GRWKEQFKKSTSEMTFK INQEKRRPVQMMFQEGMFPWAH KADWEKPFNYFYTKEEDFFVDGKTSVKVNMMYRKKHHYDK KAKWKKPFDSRNTYNSTFHVSNAKSVDVPMMKILDDF DPY KGEWAQAFPEHATRQQKFYVDEANSVNVDMMHLKGRFYFG QGKWELPFNSSFTEEARFYVDKYNDVKVPMMFREDKYYDA KGQWNHKFDEKHTTEEKFWLNKNTSKPVQMMKQNDEFNFM
 KGQWCQKFKKENTEEKFWLHKDTSKSVQMMKQTDHFNFTS HGTWCKRFEKNRTKEMPFKINKKETRPVQMMWREDTDFHE K GTWARTTFDKKNTKPAEFHKADTEKVQMMYRQGDYRYGTN K GTWVNQFDPNKFRVGPNETVRVPMMHRTDEDADYGYNET $K G L W K S K F S P E N T R K E L F Y K A D G E S C S V S M M Y Q E S K F R Y R$ KGTWEHQFSVQSTTEKPFRDNKTDSKPVQMMSLKEKLHDF K G IDWEHQFLAKNTTERPFRI NKNTSKPVQMMSMKEFYIER K GDWAKKFNAEHTTDMPFQLNKKEQKTVKMMYQKFNYIPD
 LA RWK QEFDPKATKEEDF $\quad$ LD GNK SVVKVPMMFRGG $\square Y Y D E$ K G $\square$ WE HQF LVVQNTTEKPFR】NKSTSKPVQMMSMKEFH DEK NGKWSSAFDKSQTTPQFYTASGQQKQHPMMSQTGEYRYYE K GQ WT DEFDK S Q T T DP FY LTTSGTPK QHPLMS QTGRYRYYE N G T WH N Q F P Q K N T V VPR P F F N R G S E E V
 KA DWEKKF QANNTKTQPFRNTKPVEMMYMRATFPVLIMEK K GTWVK QFDP A ETTEEEEFRPGETVVQVQMMHRTDEEAIYGY
 RGKWR HEFDPNRTKEDFFLKKNSSVKVPMMFQSGMYQVGY K GE WTEKFDKKRTFNKDFHSGNTKEVMMMTKNCELEYGAK

 K GK WK TP F QK K L N GLLY P F R VN RKP VQMMH L HEKV N G Y DE K GSWEKPFKPEHTEREFYVDAETTVVKVPMMHQMGRFDFYF K GRWDKEFKKEWTTEKFWQNKNVSKSVQMMAKSGHFNFAF K G Q WK K K F D K K A VF S S DF QHNCQVNMMFQESKFKYKYFPD K GRWHEQFDKTYTREMPFKVNQRTFNKDISSVERWETTTE
 K GK WK T P F QK TL D GLYPFRNERKPVQMMMLHAKLN IGY LE K GRWAKPFDPNATKVQKFFDNKNESVDVLMMSQSKPNFDT
 K GRWEEQFEKSSTSE DPFKI NQKEQRPVQMMFQEWAHVSE K GK WK K PF DA D NTEEADFHVVDKTTTVVKV PMMSMFDVVHVS
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 K A Y WENPFDTQS IKERDFFNTTVKVKMMHRKGYYKF DHDE
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 E K IV

 I K E P QM QV P Y V N K K L S MI I L L P E Q I E K QL NVVKT F Y E WT S S LKCKVLEMPY Q GEELSSMVILLPEDDEDEST GLLKKREWTK H HVEKPNATVYKNQDFS LFVLLPEDFDGLITYEKLREWSSA SEYRAVEIP YGSRNVSMYCI LIPEKDNDNDF DSQFDNN KWN
 RV A E GTQQV P F K G D D I T M V L I L P G P GK N L L K M M Q E L T Q E W L TNTLQVLEMPYTHESSMLVILP

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 $T$ L S S WV L MM D Y L G G NA T A I F L L P P DPSMQVLQLTYHGGISMYILLPEDGKMQHLEQTLTKDLISS LIE DVQQA KII P Y T G G E L S M M V L L L P E Q V

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 ENLENDDVHVKLPRFKLEESYTLNSNLGSLGVQDLFSSSK DMMETYDVQLHLPKFKLEETYNLKSTLSSMGMSDAFKGKA EVMRSNVRLSIPRFKIEYEPGDI DGKLTELGMGEAFSYGA LEKLLD WTNRHLPKFKLE DESCLSETLEKMGMSSVFQEKA GHMEEKNVSVHLPRFQVEKTYNLKDALGAMGITDAFRENQ
 PNMRETLVALY LPRFKVEESYDLKGTLMKSMGMDDAFSPAD K SMSLIDVHVYLPKEKLEESYTLNSHLASMGVVDLFNSNK NYMNKDDVKVSLPQFKIQTDDSLNAYLEALGMTDMFSPES K WKKMDTERVFMPKFTITGTYNLKKLFSHLGDTKDFEEHG K G LYS TTVDLSLPRFKIEYSDDLKRTLSAMGVKDLFTDNA



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 E HMKK S T QVVEVS DP EHMK S T QVEVS LPR F K L Q Q K LLK K T K L
 D M H M T E L Y L S LP R F K VD EK Y D LP DPLEMMGMVDAFDP QK
 Q N M R K R Q V N L H L P R F K V E E S Y D L K A T L G A L G M V D A F S D R D



 $\begin{array}{llllllll}\text { E } & L & E & \text { T } & M & L & Q & L \\ H & L & P \\ Y & M & P\end{array}$ KLTTTRKVV DI S LPR R F S I T D M ME LY EVVQL QL P K F K L E E TY N L K R T L S Y L G G G T K I F E E H G P Q F R N R E G S I R L P R F Q T N Y D I T L N D A L L K S L G M A EA F S D K A

 D T M A E D D V
 K K M T E T L V D L Y L P K F K ME E K Y DL G D NL IDDMGMGAA F G H DA







 E S M K S T DVV E V L L P K F K L Q E A Y D M E T V L Q R L G M V D A F Q Q G K


 EHMMRIVEVQVYFPRFKLQEEYNMVSVLRALGVVDAFQGKA $K$ D R H T R S A N V H F P K L S I S G T Y N L K T A L D P L G G T Q V F S N G A

 D M M E LY E V E L H L P P K F R L E E $K L$ E M M K T T G V $\begin{array}{llllll}R & \text { N M S M R } & \text { D } & V & H & V \\ \text { D S L } & \text { R } & \text { R S } & \text { S } & V & \text { N }\end{array}$ D SLLF R S S V N L F L P K F S I ll

 | $N$ | $N$ | $L$ | $D$ | $T$ | $E$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $S$ | $V$ | $V$ | $T$ | $P$ | $K$ |




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QAANSAFSVDLFKKLCELDK\ANFIFTPLSI
$\mathrm{GHK} A$
SEANGNFAGYLLKMLACENNPSKNVCYSPMSS

GHK
A P SNNANFAFRLYRRLDAESPGQNVDFSPVSUSTALA
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$\qquad$ E N
NADFGFNLIFRDLDSNHADGNVF
L NT
SHK YVANTIFADNFFKHLANTSTTPNLFFSPWSISSTMA




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HELAKRNKF
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MLSLGSKGDTHTQ LDEGLGFNVHEGFQQLLDGTLNRPDSQLD MVLLGSRGETEKQLKSVMKMENMINADMHQGLFKNPHEELH MLALGAKSATATQQLEGLAFNLTEVQEKELHHGFHGLILH MVLLGAKGSTAAQMAQALAVNAEEDI HGGFQSLLTQVHRP MLSLGTKGDTHTQULENLTEMAEADLHQGFQHLLQTLNRP MVFLGAKGDTAVQMSQKDGHQGFQRLLSNLNKPNRKYLLR MLSLGARSDTKTQLLEEELHRHFQHLLQELSQPHGGFQLS MLSLGAQGDTHAQILQGLEFNLTEVAEADI HKGFKDLLHI MLS SGARSATKTQVLESLGFNITVISEASUHRGFQDLLLS MLSLGTQAAVQTQL DE GLGFNLTEDPESEDYKSFQHLIYK LLCCLGAQDSTLTE: KQGFNFKGMPEREDHQAFHHLLRELDN MLFLGNQGDTSKQLQKMLCHHQFPKILSELGKSTDDYEVK MI RLGARGDGASQLDKVLHFNAVSGHGNSSNA MVSLGLRDRTQEEVLSKYDFMTIHNDFHKLTHRDFRRNFG MVYLGARGNTADQMARVFQFNKVGVHEVPAVTPEKFTGCE MLSLGTKGDTHAQLLRGLEFNLTEDAEADUHEGFQNLLHD MI YLGARGNTADQMAKVLQFNKGGDHKVAMKTSTGEYLLE MLLLGTRGKSAEQMEKVLHYDMHPDFRALISHINQQNSLS MISGGLKGETHEQVHSLLHKDFHNRFRKLTHRLFRRNFG MTYAGAKNNTYKQMNDKEFNDHLGKLLQELSQSRSGYELS MVVLGARGSTLEQDEKVQLCDGKLKPTTKHSEPGPGCCLT
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 MLSLGAQDSTLEEIKQGESFREMPARDLHQGFYYQGTKLA MAAFGAGGNTAVQMRQSLHMPADDVVSKQGFENLIDT LNN MVYMGARRDTAAQMSQALYDTQVADVHPAFQATDTQYLLR MAYLGTKGNTAAQMAQVLQFNRDQQDPKFYNNPNKTYILK MLAVVGAKSTTLTQMRIHDIHESFYKVLAVLNCTDVNITLN FTMLGAKGASEEQKKNPHQAYQKLHALLMSKSRDGVKLAA MVYUGTKGTTATQMAQEEITHDDQALIRSETNNSSNACIIK MLSLGARSNTLIGLHEVEERETHEGFQHLLQLLNDPHQEV MLSLGSKGDTHTQULEGLQFNUHKSFQHLLQTLNRPDSEL MLCLGAQDSTDADIKQGFNHEGFHYLIQRLNQGRQNVKLN MAYLGTKGPTAAQMAQVLQFNRDQDVKSGPESEKKRKMEK LVYLGSRGDTEDQMAKVLQFNKVGDHDAATGRPENFTGCH LLYNGADGVTKQEMAQTLADQGITRDEVNQGYRDDQQNND TYMLAAKGETHRQLLKDRDRHYLPSLEKQLKDNDTMNEEL MVFLGAKGNTAAQMETEDIHDGYQALISEINKPGTNYLLR MLTLGAKSTTQSQTYEGLAFNLTEIEEQEIHEGFRHFIGM HLSHGAESTTDNELTKSLYHYNKILIEEEYKSLIIKLNELD $M M S Q R A G P G T H H P D Y Q A L G F A E L V N A S H H Y N N T T V H K L F R$
$M V Y H G A K N N T A S M A K V L H F D Q V A L H S G O Q T Q S D I N K K$ MVYHGAKNNTASQMAKVLHFDQVADLHSGFQTLQSDTNKK MLSLGACSSTQTQULTSEIDQQGFQYLICSLNFPKKELELQ MLMLGAKNTTDRQTLEAFAFNLTEDEEKEIHDGFRHLLHM MLSLGAHSHTRAQLLQGLGFNLTDMSEAEIHQGFRHLHRL MLSLGAKADTHTQMLEGLHFNLTTTHEDEIHEGFRELLHT SLSLGTKADTHTQIMEGLGFNLHQGFQHLLQTLNKPNSQL MLLLGARDNTAAELSKTLHFDGVEDLHSGFHRLNTKINRT $\frac{1}{M}$
$M$
$M$
 MLSLGARGYTREQLDQGLGFNLTEMSEGE HRAFRHLHHL MLSLGLQGETHEQVYSTLHYEMLTVHNLDRKLTTHRLFRRN MLSLGAKSSTLHQLHEGLGFNTTELSEDEDHKAFEHLILM MVFMGAKGDTAAQMSQALCLNKAGDVHQGFQASDTQYLLR MLGNGADGQTATETKNSLKMEEVTGKDGNQTYYTLLRDLP MVYHGAEGTTRQEI GRVLQAVGLNLEEWNRGSREHSGAGN MASDGAASKTFDEI INTM HLNKTTHSMEGYRLLSDNDSGK MLSLGARAHTRTQULQGLGFNLTEMAESDTHLGFRHLLRT MDSNSGTLETRLQGLENDHNGFONLHLNRPNDK MVSLGAKGDTAAQVSKTLRFDAVEEVHSRFQSRDAAYVLK LTYLGAKGTTATEMAEVLHHSGFKKLLTADNKPRSTYSLK MVFGGAKGDTAAQLAQVLSDNTEKDIHEDFRAPGTQYLLR
UniRef90_M3WCX1 UniRef90_T1G683 UniRef90-B1MTC3 UniRef90_V8NU09 UniRef90_UPIO0033390DB UniRef90_O54758 UniRef90_UPI00042ADA5E UniRef90_L8YCN9 UniRef90_B4USX2 UniRef90_G5B496 UniRef90_G1SZQ0 UniRef90_Q6UKZ2
UniRef90_G3VWS1 UniRef90_G5B493 UniRef90_UPI000203558C UniRef90_UPI00044465E7 UniRef90_L5KHQ2 UniRef90_UPI000441C889 UniRef90_M3X3Q3 UniRef90-UPI000333CF70 UniRef90_UPI0002BCE278 UniRef90_Q9CQV3 UniRef90_G3SR15
UniRef90 U1M2W9 UniRef90_H0YV20 UniRef90_UPIO0032ADD2D UniRef90-M3W9H4 UniRef90_Q9U1I5 UniRef90_UPIO0046B40D8 UniRef90_P08185 UniRef90_UPI000441CE70 UniRef90_UPI00034F2BF4 UniRef90_Q2JKP8 UniRef90_UPI0001D56B29 UniRef90_UPI000379FC79 UniRef90_UPI0002C63E7D UniRef90_Q8K3K4
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UniRef90_UPI00046D6009 UniRef90_L9LBY6 UniRef90_UPI000443AA18 UniRef90_F1NPN5
UniRef90_K1QZP2 UniRef90_F1PHN8 UniRef90_F1SMW8 UniRef90_UPI0003992B0D UniRef90_P07758 UniRef90_UPI00045D8F11 UniRef90_UPI00046B4ACD UniRef90_UPI00033390BC
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 SS F Y S L K MVVRLLYVEKSLLN NVVEFDNSVKRPFPSEFEVVD

LGN R L F A E STCEFLPTFKE STCLQFYHSELEQLLSF VKA AE E


 Q D K E DVKKL L F G N T LFM D Q K L Q P Q Q K F L R VA K S M Y N A E T LP SAN Q L F E DK T Y P L L P K F L E L I T R Y Y Q V K P Q A V N F K T D V E Q



 SA N K L F G D K S A R F R E R Y M Q L S K K Y Y S T E P Q A




 $T A N R D Y G E K T Y P F H N K Y L Q D M K T Y F G S E P Q S S V M F M E A S D Q Q$ $\bar{V} H T L S V P N K E L D L R M G S A L F V K K G L Q L Q A S F L D R A R R L Y E$ $V$ Q V Q T A N G L WV D Q T LTT LQP Q F L Q A L A T Y Y Q A V V N R V L L G S



 I A N R LYG A N S F HF LQQQ Y L R CTE T L Y HA E LE VVVD F S S A L E E


 $V$ E N V T T L L TA N R L F G E K T C D F L S T Y K D S C C Q K F Y Q A E L E E L S F T E D C E E TA NGGVY G E K TY P F H N K Y LID D M K T Y F S A Q P Q S V
 TA N R I Y G E K T Y P F C C N K Y L L E D M K T Y F G A E P Q S V N F M E A S G Q

 TA N GI Y G E K T Y P F H DIG Y L E D M K T Y F G A E P Q S V N F V G A P D Q










 I A N R L F G E K T Y LFF L Q K Y L D Y V E K Y Y H A S L E P V D F V N A A D E




 NA D G S V K N S M W H K Q A F Q V




 SAN R I Y V E K T F L L L P T Y I Q L S K NYY K A E P K K V N F K T A P E Q



## UniRef90 M3WCX1 UniRef90-T1 G683 UniRefe90-B1MTC3 UniRef90-V8NU09

 UniRef90-UPIO0033390DB UniRef90-O54758 UniRef90-UPIOOO42ADA5E UniRef90 LBYCN9 UniRef90-B4USX2 UniRef90-G5B496 UniRef90-G1SZQ0 UniRef90-Q6UKZ2 UniRef90-G3VWS1 UniRef90-G5B493 UniRef90-UPIO00203558C UniRef90-UPIO0044465E7
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UniRef90_HOYV20
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130
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TSRDINKWIENKTNGKIKNVVLESSI SSSAVMLLVNAVYF PTF
FPTNFQDNAYVEKGTQGKDVDFLKDLDKDTVLALVNYIFF



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FHDPVGTTVEDNDNGKEQCQLIPEEQLQLSLIVLINA:YF
IRKEINSWVESQTEGKILNLLPDDAVDSATRMVLVNALYF
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IRKDINSWVESQTEGKILNLLPDDAVDSTTRMVLVNALYF
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A AQVKNEWVKGQTEGKITPELLAAGMVDSMTKLVLVNAI YF
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UniRef90 M3WCX1 UniRef90－T1G683 UniRef90－B1MTC3 UniRef90－M7B3F1
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UniRef90－HOYV20 UniRef90－UPI00032ADD2D UniRef90－M3W9H4 UniRef90＿Q9U1I5 UniRef90＿UPI00046B40D8 UniRef90－P08185 UniRef90＿UPI000441CE70 UniRef90＿UPI00034F2BF4 UniRef90＿Q2JKP8 UniRef90＿UPI0001D56B29 UniRef90＿UPI000379FC79 UniRef90 UPI0002C63E7D UniRef90－Q8K3K4 UniRef90－G1MQH6 UniRef90＿UPI0003D0F1F7 UniRef90＿UPI00022F487F UniRef90－G1NKH9 UniRef90＿UPI0003F1851A UniRef90－I3LYX0 UniRef90＿UPIO0046D6009 UniRef90＿L9LBY6 UniRef90＿UPIO00443AA18 UniRef90＿F1NPN5 UniRef90－K1QZP2
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KGKWEKPFE ${ }^{170}$
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$K G K W L K P F N E E H T R E E D F H V D E A T V V R V P M M N R E G R F H L H$
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$R G K W E K P F E A E H T S E E D F H V N E E T V K V P M M K R L G M F R V F$ KAKWTQPFNPADTNTSCPFLVGGQTPVRVPMMQQVEMFGF KGQWNRKFDENHTREEKFWLNKNTQMMKQRNKFNFSFLGD KAKWDHPFKHYWDKNHDSSSMDKK】IRSSMMHQKAQHYDK RARWQREFDPKETKEEDFFVSRNRSVKVPMMFRGDMGYDK
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$K G T W Q H Q F A K H L T M P D T F H L D G E R T V Q V P M M S L K E R F R Y A$ KANWEKYFDCENTVDPFFLNENEKTNVKMMSQQGLYRDGF KGTWTQPFDUASTVEENFYVDETTVVKVPMMQQSSTVSYLD KR】WEHQFLVQNTTEKPFRI NKTTSKPVQMMSMKEKLQAF KAKWMKPFNPADTHKSFPFLVNKQTTVH1PMMQQMEKFAF K GEWTQPFDPERTQTQPFTRLDGRRVRVPMMVQSGRYDYT KAQWKTPFNPNHTYESEFHVSKNERVKVPMMTLRDETPYF KANWTYKFNEELTTPRPFTNADMNEVDMMHKNDKYDY DQD K GKWEKPFEANFTTDEDFHVDENTTRMMKGHGVFDVHHSD KGTWEHQFSVQNTTERPFRINKTTSKPVQMMSMKQFHDEE K GTWENKFPVEMTTKRSFRLNEKQT DKVPMMQTKGNFLAA K GNWTVKFKKNTKETVFRLNKNETKNVQMMFQNGDYNLA A K G L WKKEHTKEEDFWLNKSTSKPVQMMTQCSSFSFTLLED K GYWEEPFESYDTRDDDFFVDAEHPVKVKMMYKSTYYNDH KGSWVKKFPVEMTHNHNFRLNEREVVKVPMMQTKGPFLAQ WQHRFDPKETREENFFVDKSKTVKVPMMFHGGMYDVGYDD KGKWAKEFKKEGTQDKIFHVDAKTEKKVPTMFASGSYVYG K GK WNEQFDRKYTRGMPFKTKQEKKTVQMMFKKAKFNMGY K G IDWEHQFSAQDTTEKPFRワNKTTSKPVQMMSMKKNFHDE KA AWEKPFDSENTYEDDFFVSANERVRVNMMQHENRYYDQ KGDWENAFEVSNTKREPFQI SETEMMNMETDTWLIDGMSKP KADWEKPFQPSMTTTQDFHVDENTVVQVPMMLQDTAHHWY K G T WEHQFSVQNTTEKPFRINKTTSKPVQMMSMKEFHDEK K GYWEKPFNNRDDVFLLDTKNSVKVKMMHAYKYFNDHRDE KGKWKKPFDPENTEEAEFHVDESTTVKVPMMTMDHVHHCS RARWQHEFDPKDTKEEDFMLDQNKSVKVPMMFHGSMYKVG $K$ GT WE HKF
$K$ GK QNT NSNWQKQFDSKTTKQPFYLEKNKT DYPLMSQRGNFSYYE K GT WAHSFDPEGTREKNFYVNETTTVLVPMMFQSSVIKYL K GK WLYPFNSKFTEMETFHINKYRSVQVPMMFKSDKVNST K GNWETQFNKDCQFKDNKNETKPVQMMFKKAKFNMSYMAD KAYWEHPFNYEATREEDFFVDGKTSVKVDMMNPDSRYNS L NGTWLN $\square \mathrm{FND}$ NRDTKDR $\square \mathrm{FHVSKNQTKLIPTMYSKSKYTHG}$ KGTWEQKFPKERTHYRNFRVNEKTNVRVPMMTNKGNYLAA KGSWAEKFDEKDTEEMPFKLNKNEKMMYLMKKFRFNYIPE K GK WKVPFNPNDTFESEFYLDEKRSVKVPMMKDKPYVRDE KAQWANPFDPSKTEEEYSFLVDKTTTVQVPMMHLMEQYYH KANWKSPFKKEDTKEDDFFVNSKTPVKVKMMHGEKVCRDD
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$K A K W E K S F D H E K T E D S P F W L N K N E Q M M R Q Q N T F K D G Y I E ~$ K GMWAHSFDLESTREENFHVNEATTVQVPMMFQSNTIKY L KGSWVNKFPVEMTHNHNFRLNEREVVKVPMMQTKGTFLAA RGEWEKPFSPNATEEGDFFVNNDVTVKVPMMTRTSFFEAQ K GRWKEQFDRKHTRGMPFKVNQEKKTVQMMFKHDKFKMGC KGSWQSRFETKNTADTPFNKEDGTSSPLKMMFQEGTYKAN KAKWERRFDYKDTVDAFF $\square$ NENEKKNVKMMKQKGDFRGGF HGTWS $\quad$ PF $\quad$ LKEDTVPAPFYASPDARTEVKMMKRSGRFAYQ QSTWDYSFNDAEDDSFYVTPSDKVPVKMMTLVDNGQYYHD K A LWEKPFSRSKTT LQD FYVDENTIVQVPMMQYHWY L HDR K S D WK YKFDKNKTAKSDFNANNKDQTDFMVAQASVNYLSS RGKWEKPFEPEHTTEEDFHVNGETTVKVPMMNRLGMFRVF KGTWQDEFKKEETKDAPFRLNKRDTKTVKMMYQKKKHDHE KAE WE VKFKAEDTEDQPFRLSKNKTKPVKMMYMRKVFMET KAYWENPFN $\square K G T H K D Y F H V N A K T S V E V E M M \square R D G F Y K A Y$ K GRWNEQFNEYTREMPFRVNRKEQRLVQMMFQEGTFRLAH

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210
220
230

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 $V$ Q A Q V L E L P Y Q GR E L S MVVVVLP DE GV D L S T F E K F Q T WA S P




 VHA Q I V E IPP Y K GK D LS M F V L L P M E DD GILK Q L E E Q L T W DK A
 HE Q TM K F K P Y VE N EVVSMF I L L P D D I S R E LTM H K L A E WS N S










 $Y$ I E K P Q Q L F Y E S R D L S L L I L L P $G L N C S V L Q M D Y R G D T T A L E F L P$
 $D E V Q V$ V R L P Y Q D R S H S ML V F L P TLS S WVLLGNYVGNAT








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250
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 QS LIYETKVALKLPRFKAEF QVELSEVFQKLGMSKMFSDQA
 A GLTTSSQVDLY
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GGFTEAMGDFRMP ENRSSRFANDCLPKAI EDEIRLNDPLKRLGMEEAFDPDR DMMDTYEAVRLYLPKLSISGTYDLIKVLGNLGITKVFSNQA EKWQKSMTNSRTPKFKLEKNYNLDGFLRSMGUEELFSEKG AKKNKQNVDVYLPRFKI EENYDLENVLKAMGMLDLFDHKA GHLDEREVDLHLPRMQVEESYELEATLEAMGLRSAFREHA


 EKMTKSKVQVFFPRDKLETSYDLESFLRRLGMTDAFEEKA DMMETYDVGLFDPKFKLEESYDLKSVLSSMGMSDAFNPSK S K F E T R R L H L Y Y
 D MMELYEVELHDPKFKLEETYDLKSTLS SMGMSDAFSQSK

 DMME LY EVVQLQLPKFKLEESYYDLK STLSS SMGMSDAFSQSK DT LA ENDVEVYMPQFKLEEHYELK S I L S SMGMEDAFNMGQ NFLTSSWVHLY ANMKSRKMDI SFPKFKLEQYKMKKILYA GGKNGA AEMDYSEVEVFWPRFKLVQTYDLKPVLKSMGMADAFDEKV LRKERSRIHLSSIPRFSIVGTYDVKEIFRRMGVTEVFTNQA ANTTRFYNDI YLPKFKI EFT $\square \mathrm{DLKNALNKDGL} \mathrm{\square TMFKPNA}$



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 QNRHTRSANVHLPKLSUS GTYNLKKVLVPMGVGQVFSNGA T \MYDEMVDI SFPQFTMESNLDLSAI LQKMGITDVFEEKC


 E A L Q N S G L K A T K V V K V G L ENMSEEKVDVVSFPQFTGEEDTYDLNSULQDLGVTDIFDESK PALKGMREAFVDGA
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$M T Y Q G A A G S T K E A M E D I T V N H S Y Q N L I P Y L N G L D D K K L N ~$ MTLLGSKEKTREEMDDVDINSGFLQLLHHLRSSRGDVVL MLQLTTGGETRQQIQEAMQFEIERQLYKELMGPWNKDEIS $F L S L V A R G T T Q T E L L E G L K F N D H Q G F Q H L L Q A F S Q P R P A L$
FAYEGARGATRDEMNETRWKGRGLILSLESNESSPFVLR FLSLGAHNTTLMELLRGLKFNLTETSEAEIHQSFQHLLRT MTANGAGSTTRAEMEQVMEDFNPYMYSFQNRLTTSEDVSF VCMMAAKGETHRQHAMKDRVDHQHLDPALLFKQLIGNLTMNE MLSLGTSGHTRTQLLQALGFNLTRMSTETHQNFRHLYQL ALMLGAKGQTRAQVLSRTQPLLLPALFQQLRETLSSQPEL MITVGTGNRTQEQILHALGFDMFHDVFHKLTHRLFKHNFG MVFMGAKGNTATQUSQALCLNQGGDVHQGFQSPGVHCSLR MVFLGARGDTEQQMANVLHFNRVGGYDDTTGTPENANGCD MITNGATDNT LAEMQNVLGFPANTFSLDDLNNYNQKLTSA MVFLGTRGTTAAQMSKTLHFDAVKKIHSSFQSLNSDIHKR MLQLGASRKTKSQYNSNGVHQSLKIMRESLTEKKNRDTVT MAYAGA DGETAQEMDKGLHLVSDNKYVELLDSLNSSPLVK MAAYGARGNTEAQFRNVLHLPTSQYQSLI DNLNNVKDNKL FLSLGARGTTLTELEGLKFNHQGFQHLLQTLGQPSNQL MMELGAQGSTLKEIRHSMGYDFLKDFSNMVTAEESQYVVK LLSLGAKNNTLKEILEGLKFNHQGYEHLLQRLNLPGDQVQ MLSLGAKGDTHTQLLEGLDFNLTERAEADDHRGFENLLHT MVYLGAKGNTAAQVASQQVLSLSTEKDDHQSFQSTQYLLR MLSLGARGYTRAQLLQGLGFNLTKTSEAEDHQGFQHLHHI MI LLGARGDTTAQLHKTLHFDMVEDIHSRFQSRGTSYILK M1 MNGANGQTAGELQKTLNLDAQTLTYKNLMQNGPSVDPK MLDLGARGNTALQMEKVLHHQETQKFLTELNKPSEAYNLK MVSLGAKGQTLNQUEGGLGFNTESSEEVHNGFQHLLHM MLSFGACSRTQTQI DEVLGFNFTDTPMAEDQHGFQYLICS MTYAGARGETEKQI NDLHTAFNADDQNDGSKEKPENFKLN MAFAGARGQTQQELSQGLGFSDYTHHTERLKSTPSNSTLD MLCLGAQDSTDDEGKGFNFRKMPEKHEGFHYDIHELVQK MVMLGARGNTATQLSEAFSGCLQCLKPQNGQEDDVHAKFS MVLLGAKGNTEAQMLKTLHLDEVADVHSRFQALTTDDNRR MAQLGANGNTSKALTTAMGFSMLRQQWLLQQGLSTEEGVE ALSLGTKGDTHTQLLEMAETD HQGFQHLLQTLNRPNNQL VFMAAAKGETYRODQGKENFHOLPALFKOGKDNDDELK MVYLGAKGNTSVQMSQALCLIRRDGDVQGFQSPDTQYVLR MVYLGAKGNTATQMEQALHFDKTSDVHSGFQQRNASYQLK MIMLGTRGPTALQLLQKVYHHQLDMFLDTDISKPTNDYELT MAI NGASGDNRAEMLSVMGFDNSDGMNEAYQNDRGADQTA MVLLGARGNTATQMSESLHGHKTKDEVHELNKKDAPYADS MTANGAEEATLAEMLSVLGQDVSIKELNEYNRSVMDFLAS ALMLGPKGQTKAQLESALHLRALNQTRPPHLPALFKQLRA MI FLVTQRVTTSQLQKVFHHEQLQTFLTEDRKLSEDYDLY MVF GTKGNTAAQMKQVLCLSSKADLHKSYQPRGMYLR MTLNGAVGATADEMRTGYSTADINAYSRELLREALLRADPK MLQVATGGDTRQQLQAMRFKDHEKGMAPGLRRLYKELMGP FLSLGARGSTDTEI DEGLKFNLTE DQHQGFQHLDQTLNRP MVRLGARGDSGRQIDEVLHFNEISQEEDKEPDPCRNYTMS MVLLGAKGSTAAQMVQVGWHTYYVKLNCKVHKPGAPYCLS MVYLGAKGNTAAQMAQVLHLNQDQDVRSCINKPSNAYILK MLFLGARGNTAAQUKVLSLNRGGDIHRDLQALFTQHSLK MVFLEAKGDTATQLLKTFHFDGVEDFHLRLQQSNVPYVLK MALTGAKSDTLTEILEGLEFNIOEGFQHLLHTLNQPNSQL MALDGAAGETEQQLKISEITKQVIESYRISATDGSEQKC MAYVGAKGATQQELSTALGYNTALLNEDDVQAAFADQNHR DTANGAAEDSRKELLDALHLKRMRMTSNKASRSVKQFFH MAAFGARGNTKAQFRNVLHLPTSDYQSLTDNLNNVKDNKL LAANGARGETQREMLGDAEMGAVNAHMRDVWGDMANPGRG ALSVGARGETHRQLFSGLGFNSSQLMQADVDQSFRTLLQN

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UniRef90 T1GWS3
UniRef90_UPI00022C953F UniRef90_UPI0003C85EE4 UniRef90_UPI0004442816 UniRef90_K7FUR6 UniRef90_F1M8F5
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## UniRef90_K4FTH4

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 VANRTGNGEKTYKLFGLQKYLDYVEKYYHASLEPVDFLNAADE
 $\bigvee A N S A A V Q Q G F N V I D D S Y Y D A L N R T F N A H V F N V D F Q S H G Q Q$ TANGLYGEKTYPFHNKYGEDIKKYFGAEPRSVNFVVEPD Q TQDLKMNLGNTLFMDQKLKPQKRFLRLAKTVYDADTVLTN



 TAN K L F GEKTYDF LDPSFKDSCRKFYQA EME ELLD F I S A A E E VANALWGREGFAFSDAFLDSLESNYGAGLRRADFAGDPDG SQA GRDH S E F GVLLFS Q I NQ P D S N Y T L LANRLY GEKTYHVLPEFLASTQKMYGADLASSVDFQHAFEE

 MANKL FPEATYKLEKDFLSKCKEFYETEIQALDFKGNPDA


 H QANSIWW RNQENA Q MNEDF LQTDKNYYQA DAYYAAFDD
 GLA Q GS FAF I HK K D F EVVNET F R NLDSK S Y F DTVVCVPTNF H N A

 LANRLY GEKTYEFDPEFLASTQKMYGAELASVDFQRDSEG

 QLSVGNAMF VQE QLKLLDKF RDDARA LYYAAEVVSSDNF RDP



 LANRLY GEKTYNF LDPEFLSST LDKMYGAELASVDFQHASEE
 L N N S GNADLF DDNNMK L I QK F L E DVVK E F Y ES EAF S T D F H N T「
<-
VANAFWGQENYHFEENYLDDTLALNNGAGLGGL NFEKDTE K $T Q D L K L S I G N M L F D D H R L Q P Q R K F D E D A K N F Y S A E T D L D T D$
 IA A GVMVERKMNLEKRYHRNLAKAFKTHPHQVD FTMPD Q


 LA N R L Y GEKTFK FV A D F LLRPTKEFYGAEL EAVDFSNAPE M IVNRLFGEKTY LGFLQKYLDYVKKYY HATLEPVDFMNAADE
 $V$ VLNAANSVWYNRGIQMKPAY LDDVMKNHYAAAAQATDMES


 T T $\square G G A N A D W Y R Q G A T V K V P F I E A N R T Y Y D A E V Q A L D F B S$ LA N R L F G E T T Y GY L P D F L A S T L L K F Y Q A E L A A V D F R N K P E E SNQLQLSVGNAMFVLEELKLLDKFKEDARVLYSSEAFSTN





 LQA HASQA GLEVVANSAAVQENFSVLESYYNALLHTFNAHV
 AVANKVFVAAS LNLKPSYKNLTEVVFRSSSQLVNFAQSRE VKLTAANAVWHHRDFAVVPAFREVAAKQYGAEVFGTTGGR AKSGDTSEGTADVFVDNRFKPQPEFKQSYFAEGFNVDFTQA


UniRef90 Q6DG30 UniRef90-UPIOO03C80B65 UniRef90_UPIO003344B0A UniRef90_D3ZKAO UniRet90_Q9U116 UniRef90-L7LTU UniRef90_UPIO00333D046 UniRef90-UPIO0042AFOF7 UniRef90-UPI0003FODO7B UniRef90-V4BAN5 UniRef90-W5JHH3 UniRef90-UPIO003DOCDC0 UniRef90-D3K2R2 UniRef90_UPIOOO4403699 UniRef90-D4GWF5 UniRef90-UPI0003AE43DB UniRef90-UPIO00441B692 UniRef90-UPIO0045D857E UniRef90-UPIO0038C549A UniRef90-R6T488
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UniRef90-F7BHT5
UniRef90-LLKK8V6
UniRef90-UPI000328A19B UniRef90 C5A4E9 UniRef90_UPIO0027F3F09 UniRef90-UPIO0045DE58F UniRef90-R5K8Z6 UniRef90-UPI0003957BD8 UniRef90-UPIOOO3336639 UniRef90-HOVQ25
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UniRef90-M3WCX0 UniRef90_UPIOOO3F134B5 UniRef90-I2GRX6
UniRef90-l3N5Z4
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## UniRef90-K4FTH4

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 FQNLETAQRE $\square N K Y$ VSQKTHNIINNI DPGTVMLLANYIYF SSAEKLIDDYMNQRTQGEILNLISSLEPDTVMVLVNYMIF
 PATVKEDNKWCSDKTSGK\PEIDDNIGSDMMMFLLNALYF TRGKINSWVENQTNGKIQELFPPGTVSNDAVLVLVNALYF SRKHINTWVAQRTEGKNIDELSSADDVVDALMVLVNAAYF ERERINEWVADQTEGRIEEDLLPAGSVTPDTALVLTNAIYF SRTHINAWVEEETSGKTENLLAPGIINSDTKLVAVNESKT NKWCSDKTAGRDPE IDDQINPDMMMFLINALYF AQ DNQWDAEATDQKTTKMVDSPIESDVVMYLINAIYF SREAINAWAEKETSGKIKDLLPSGSVDSLVRLVLANAVYF EAAKQLINSYVEKKTQGKDVDLMKNLESNTVMVLVNYIFF AADVINDWVKNRTGGRDRDI SRLS PDTRLVITNAVYF FATDFQDNDYVKNRTRGKDTDLIEDLDSQTVMVLVNYIFF RTTKEINQWIDKNTNGMIPSLLDGPIADDIVLYLINALAF NLTQAKLFUNQNUNKMTKGKIPFEELDHHNKLVLVDYIVF
 PKTVARFNQLISKVTKGKLQDIVADVDPQTAMLIVQALHF SREHINAWVADRTEGKISEVLGAGTVDPLTKLVLVINAI YF ARMKINSWVKTQTKGEDPNLLPEGSVDEDTQMVLVNAVYF ARKVINEWVKGQTEGKDPELLAAGVVDNMTKLVLVNAIYF
 A ANGNNSWVEQNTNNLQKELISADMLNDLTKLVLVNAVYF DTAKSLINDYVKNKTQGKVVDLFKRLDPLTEVVLVNYIYF ANYMNQWVENSTNNLLRDGLVSPKDFDAATHLALINAVYF EAKKLINDYVRKQTQGK\KELISVLDKKTS MVLVNYDYF KAFSVNFKHSEEAKKQDNDFVEKGTQGKIVDLVQELDKDT SRKHUNAWVSEKTEGKIQELLPGGS円DAKTRLVGVNA MYF ARKEINQWVKGQTEGKIDPELLASGMVDSMTKLVLVNAGYF PATLGKDN SWASEKTNGKDPKVLDQUQPENVMFLMNALYF
SRKKINSWVESQTNGRVWEGYSWQYRAQAVVLHVRDPPWE KEATKQUNSYVEKKTHGKDTDLLKDVDERTLLILINY円YF LIATDFSNVSHVEKQTKGKVVGLIDQDKKPNTDMVLVNYI HF SRRDINEWVENKTENKDEDLLPKGATKPSTRAVLTNA:YF AVDFVNNWVKRKTHDKIEEKLFNEPLDPDTLLVLGNA:YF TRVDINSWVEKQTQGKIKDLLAEGVVDNMTRLVLVNA: YF ARKEI NQWVEEKTEGKI PNLLPEDSVDSLTKLVLVNAIYF A ISVINAWVSDHTAGLIPEFLQSGSLTDQTRLVLLNALHF ARKVINDWVSDATKDKITKDLPADGIDATTRLVLTNAIYF THAKNVDNQNDKKKTKGKDPKLFEEFDQHAKLVLVNYVLF CRKHDNDWVSKKTEGKISELLGPGTVDPLTKLVLVNAMYF TRQQI NSWVENKTEGKIQKLLAEGILNNLTRGVLVNATYF SRKKINSWVERQTKEKIKDLFPEGSLNNTVKLVLVNTVYF
QASVKAINDWVNGKTGKDPSIDDNISADHFLFLVNAVYF EEAKDADNKWVENNTGGMIPMIYDKPPGGVAALINA YFN VTLNFRMNRYINKETWGKIPQLFVEI NPDTKLILVDYVSL SRKKMNAWVESQTNEKIKDVGPENSISSSTKKVLINAIYYL PSATATDNGWCAQKTHNRDKEIVKRVDPTTFMYLINAVYF
 FGDPEAARSLINDYVKNKTQGKDEELFPETVLVLVNYIYF SRQLINFWVESQCQGKDKEFFSKNTINDATVLVLVNAVYF
SRNHINAWVSRKTEGKI PELGAKNSIDAGNKLVLINAVYF TRKVINSWVTNQTEGKI LNLLPENSVEATTKMVLVNALYF
 QAAMKQINDYVEKRTHGKIVDLVKDLDQMTAGALVNYI FF NLLEKVNSWVSEATRNKISTILNESPDPNAILLLLNTI YF TRARRQUNEYUNNKTQGKLTDMFSEDDSPALLILVNYIGF PKVDFEQGQQAIDVINAWKLFADPLSTDTRLVLVNAIIF AKANDNSWAEQNTNNLGITELITAEMLDDTTRALVLVNAVYF PEAAAADNRWVARRTRDRITDLIDRTYAEQRMALVNALHF TESVNTUNKYVETKTNGK: DKLVESGDVNTVMYGISYMYF

## UniRef90 Q6DG30 UniRef90_UPIO003C80B65 UniRef90_UPIO003344B0A UniRef90_D3ZKA0

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UniRef90
U1GWS UniRef90-T1GWS3
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Ref90_UPIOOO4439D8C

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$K G N W A D K F N K D R T K E R P F K I S K N E S K T V Q M M K Y N M S D S ~$ KGDWKEKFMKEATTNAPFRLNKKDTKTVKMMHQKARFPYG KGNWEKQFDKEDTREMPFKVTKNEQMMFKKSTFKMTYVKE KAPWEYQFDKNDTFDDFHSPAGDQTVPFMHDSREFPCGED KGSWLHKFKEQQTTMKDFH TRENKVEKVNMMFMERKFRFN NGHWKTPFPESGTHHRFHKSDGSTISVPMMAQTNKFNYTE KAKWKDPFDPRGTLKTKFHVSKSKSVEVPMMNDDNLRTPY KANWSSRFEVNTKNETFYSPSGPVVVQMMHQTAKFLYFEN KAKWKMPFDPQDTXXXXXXXXXXXXXXXF $\frac{1}{1} P D Q D K M E E$ NGQWKMPFPASDTH RRDFHKSDMMSQTNKFNYTEFSTPDG KGKWVYPFNSKFTEMETFH TNKYRSVQVPMMFKSDKDYST GGTWEQPFNPESTQEKNFHVNETTTV VVPMMFWSGSVQYL KGTWEHKFDKSKTAMLHFHTSKTEVVKVPMMYVKATLPAT KGKWKGQFDKKHTRGMPFKПNQNEKKTVQMMFKEAAFRLG KGKWKTPFQKKLKQLYPFRVNSHESDPVQMMYDRNDGY K KGNWQEKFKMAT TDTPFRDNKKDTKTVKMMYQKSKFPFGY KGLWKTKFVPENTHDEDFYTADPMMAQRSHFKFGLDSVPN KGNWAKKFRPND GMKKPFYYSESDSMEVYMMSQKYGAFED KGQWKDKFDPKLTSDMAFHTSKVEVKNVPTMYRKGNYRYD KAKWKDPFDPQVTNQAEFHVSENRSVEVPMMRDPSLVTPM KGNWKSQFRPENTRTFSFTKDDESEVQVPMMYQQGEFYYG KGKWKMPFDPHDTFQSEFYLDEKKSVKVPMMKDEPYFRDE VLA VV Y DFFKGK WVEPFNANDTTEEDFHVDEATTVKVPM
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 K LA A SLYKLA NSQNLVFSPASVYLALA DADNAFGLTLLRTVDTEGTSKNVFLSPDSVSMALG PSYGERGSDLGI QVFQQEVRSRPLDNIVLSPHGVASILG LAEANGTFALNLGKTLGEGNSKNVFFSPMSMASALA ATFADQTSEFAFDFLKHNAEEKADKNYFVSPLSLHVALG GNTLQERNLFATELFQTLATDRQDENVIISPVSIQLALG LQEKQTDFGMRVFSQVAQNSKGSNLAFSPYGVATVLA $\square R E A N G D F A D N L K M L G E E D H S Q N V F F S P L S I S S A L A$ SDLG|LQLFAQVARSRPQENVVMSPHSVASILG MTQAGRDFALRLHQSLATELEQENLILSPYSHMAALAA SLLEANATFTMDVFKEVSLDTNKNIIISPFSTSDVLT LSTANAAFALKLFRVLGEDSGKNVFFSSSSMFSSLA LSTANTRFTUDLFGALNEANPTGNLFVSPDSISSALA NNSFGFNLAKNLLSEDTDKNMIISPLSISNILA SANREFAFRLYRKLAADSQGKNTFFSPVSVSVALA KLSNANTHFALDLERKLNETNATGNLFFSPVSVISAALAB NAGMVKAQNDFGLRLHQALSDEYTSDNLITSPYSITQAMA MVRADQTFAFEFFEHLFVEESDNNFMVSPLSLSMALA


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 MASTGAASKTFDEMVATMLHNETSYSMEAYRQTSANYNLK $M L^{T} L G A Q N S T L E E$ R R G G H L L Q E M A EK DMH L GF H Y H K L N RE


 $M V L L G A K G N T E A Q V L K T L H F D K V E D D H S R F H A L T T D D N R R$


 MA QMGAA GNT LIR QL H THMGYS LQQVRGAPRQQQRLLQQKQLAN $M V M L G A R G N T A T Q M S E C L Q T E D C W G D V H E L N R T D A P F T F S$ MVYLGARGNTES QMKKVLHFDSDTGAGSTTDSQCGSSEYE
 MTYE GARGQTKDEMQKVFHFHLDDINEDNKKDKKYQLHTA

 $M V E L G A K G K A Q Q Q D R Q T L K F E D T S T G E E F S S G K K Q E F T F N$


 $M L S L G T C G H T R T Q Q L Q A L G F N L T D M S E T K G H Q Q F Q H L H Q L$ LTYEGAKGETADQI KSVFYFPDYQEVNAGINAGDPEYDLE $M V E L G A R G S S L K E I R H V L G Y D K D K N G E N M L T A Q E K H Y V L S$

 $M L Q L T T G G N T R K Q I Q S A M E Y S V E R K L Y K E L M A P W N K D E F S$ I WNQHPTPTLHFNTVEEDHSRFQSLHADINKSGAPY LIK


 $M L S L G A F S S T Q T Q Q L E S L G F N D T D T P M T E D Q Q G F Q H L I C S$ $M T Q N G A A E E T K Q E M L N C M N D S D S D D N K Q Y Y S L L D Y Y N N L K$ $M L Q L G A D G K T K K Q L T H M M R Y G V N R V G K M D K K S K K N K D V V I$ $M \backslash A H G A R G E T Q R E L Y E T V G L A A L T P E E V N R Q S A R V V G T L D$ MAMNGNEDEDEAEFMRVL RFEGMELEEANQAAKSLNTNYPK $M V L N G A N G D T R T E M E Q V L S S N G F T A D D \square N S A Y Q K L R N C D T$ $M V Y L G A K G N T A T Q M S E V L G L S G N G D V H Q S F Q T T D T Q Y$ TLLK
 $M A W S G S G G G T K A E M A K A L G W N G S H P D E D Y L R D P A E G D K L K$
 $M T L N G A R G E T R S G M Q D L S P T D D N D A Y R G L I D L L E G L D P N V$ $M L L P G A H G E T R K Q V L T A L R Y K K N G P Y K M L K K L H K N Q D S L L$ $M V Y M G A Q G N T A A Q M A Q V D V H Q G F Q S L L T E V N K P G T Q Y L L R$ $M L Q V G A R G S T A K Q D K T C L K V V D C N D Y H L K N R S L Q M E K K Y A$



 LAYNGAAGDTAAEMSAMLGWKDQPLADVNEGNHQLSRGNG $M$ VMLGARGNTATQMSECLKKTKDCMDDVFHELDKPDAPYALS LAYF GAD GKTEEQWAKNKKHVNNGYRLEKQMRYSRTKKMP LYYGANGETAN QLKKYFKII D LI LM GAN GTTAS QUSQQVLSLDKCSNGGADVQQGFQ GHMLR $M$ I F L G S R G D TA A QI S K GLLHFDKVVKDVHSSSFQS CGAS Y TL K

 $M \vee L L G A K G N T E T Q L L K D$
$M A Y V G A R G E T Q Q D L D E A L G Y T S S G L M P D H V A D A Y A Q H T Q S$ LA YNGTA GDTAAEMADMLGWRGMNUNE GNRQLRSLLEN G G MT WNGAA GKTKEAMQQTLKMDGFSDYYKKLREALLVTDPS

UniRef90 UPIooo3F16B0B UniRef90_UPI00036D6EEC UniRef90-UPI0003F09659 UniRef90-M8BKV9 UniRef90_A0RV03 UniRef90_G1MYU4 UniRef90_UPI0003F10C00 UniRef90_UPI00038EA7CB UniRef90_UPI0003F0ED70 UniRef90_G1NUL4 UniRef90 G1KCT2 UniRef90_UPI000333DCA5 UniRef90_UPI0002BCF2A4 UniRef90_J9JUU5 UniRef90_UPI00038C1EE5 UniRef90_F6WOI4 UniRef90_UPI0004419916 UniRef90_G3TDW3 UniRef90_B7Q0E8 UniRef90-P15059 UniRef90_F8EDV5 UniRef90-UPI000386F125 UniRef90_UPI0003340CFE UniRef90_H2NM57 UniRef90_UPI0004422E40 UniRef90_UPI0004157DC7 UniRef90_W5N9L0
UniRef90_I3JZB2 UniRef90_P01014 UniRef90_F6S634
UniRef90 P01009 UniRef90-E4TH65 UniRef90_B5X2K0 UniRef90_G3MLS9 UniRef90_K1YBK6 UniRef90_UPI0003343826 UniRef90_S4RUS7
UniRef90—D4KMK0 UniRef90_R7UG47 UniRef90_UPI0003C8D2AC UniRef90_G3TN11 UniRef90_UPIO0038EE4CA UniRef90_E1RK56 UniRef90_F7EL68 UniRef90_F6WFZ5 UniRef90_UPI0003F18DB3 UniRef90_UPI0003F110C2 UniRef90_UPI0003317CF6 UniRef90_G3VRY9 UniRef90-H0WKU7 UniRef90_R7VV80 UniRef90_T2MF56 UniRef90-E9HI86 UniRef90_UPI00044463E7 UniRef90_A5N921 UniRef90_G3SL81 UniRef90_UPI0003665B1A UniRef90_G0J4J0 UniRef90_UPI0004729037 UniRef90_O08800 UniRef90_UPI0003C28711 UniRef90_T1GCP9 UniRef90_UPI00038F77DC UniRef90_17M668 UniRef90_V5HB59 UniRef90_Q2S034 UniRef90_U3BQ61 UniRef90_UPI0001CBAA24 UniRef90_I2ETU3 UniRef90_Q292U3
UniRef90_I3WWD7 UniRef90_UPI0003991E8D UniRef90_UPI0003F0F395 UniRef90_W5M8T2 UniRef90_G4H7Q3 UniRef90_E6ZI89 UniRef90_T1PFV3 UniRef90_H6TAD3 UniRef90-17HJI3 UniRef90_UPI00038EAF8E UniRef90_F6ULRO UniRef90_U5RPS0 UniRef90_J7FHW7 UniRef90_UPI00042C0B22
UniRef90_A0A023GN55 UniRef90_A0A023GN55 UniRef90_D3EEX3 UniRef90-UPI000476D379 UniRef90_W8BMF4
UniRef90_UPI0001C37CE8
 $V K L T L A N S V W Y R Q G V T V E T S F G D V L R K S F K A E V T A L D F A S$ LA NRLYGEKTYHFLPD FLLASTQQKNYGANLDASVDFQHASE E LA S A L Y L Q E GF DVKEA Y L H G NKE L F Q S A T K LVVDF LDDAK S C
 D D P HAK LDALANSLLWP F VGNVRPEYLDVGRSTVLATDENPG DA N R LTF GEK S Y S F L S D F LTVNTQK L Y G A D L A A V D F L Q A Y G E

 IA D A $V \underset{V}{F} \operatorname{F}$ GLS Q GS WA F I H K D F DVVTET F RN L S K R Y F D T E CVVP VN F R N A

 $V G K C L F V Q N Q L H P E Q Q F L N G L K N M Y G G D D Y$ LIENFKNTAET






 VA N R L Y R E K S C P F T Q E F L DQ S K K H Y S T E L E S V D F K T R S E E







 I A N S L Y Y L Q N G F H DiS D K F I Q L M K K Y F K A E EV E NVV D F S Q G S T V IA N RLY G E K K F Q F Q Q E Y V E N V K K F Y L A G V E S A D F D N A A E E SHN WE L GLLS Q G S LAA F DH K DVDDV K E S F L N L S K K R Y F D T E C V P


 I K G D E N F T L E A A N QLY V A E K Y Q LT D D F K Q N L N D N Y F A V D A



 SACRLF GEESCDFLSTFKESCHKFYQAGLEELSFAKDTEG


 EVALLANS IWWYRE GLPVVKQAF DDTNRAHFDAEVVEADVDFAD P IANAMFTKEGFPMKEAFVATNKANFQCESRSLDFRHPSKA

 TA NRLG GEKTCDFLPAFKES CQELYYQAELDELSFAEDTEE
 $V A N R L Y$ G E Q S Y Q F V E D F L G D T K K H Y R A E L E S V D
 R A N K I F S D N NF DI ME S FKE S CYKL Y RVE I EK LD F K GT P E Q LANRLYGEKTYDILPEFLGSTKKMYGAEMVSVDFQNDTEN

 $T$ I R VA N A A VI K N T Y Y F S S R E Y L D D L L S G S F EA E I S S A V L S S D E GVVLNVANSVWHRPGLK LVK EAYAEAVK DSYGAAVRETEDLQ


UniRef90 UPIO003F16B0B UniRef90_UPI00036D6EEC UniRef90_UPI0003F09659 UniRef90_UPI00042ADB6A UniRef90_M8BKV9 UniRef90_A0RV03 UniRef90_G1MYU4 UniRef90 UPI0003F10C00 UniRef90_UPI00038EA7CB UniRef90_UPI0003F0ED70 UniRef90_G1NUL4 UniRef90 G1KCT2 UniRef90_UPI000333DCA5 UniRef90_UPI0002BCF2A4 UniRef90 J9JUU5 UniRef90_UPI00038C1EE5 UniRef90_F6W0I4 UniRef90_UPI0004419916 UniRef90_G3TDW3 UniRef90_B7Q0E8
UniRef90_P15059 UniRef90 F8EDV5 UniRef90_UPI000386F125 UniRef90_UPI0003340CFE UniRef90_H2NM57
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UniRef90 P01009 UniRef90-E4TH65 UniRef90_B5X2K0 UniRef90_G3MLS9 UniRef90_UPI0003343826 UniRef90-S4RUS7 UniRef90_D4KMK0 UniRef90_R7UG47 UniRef90_UPI0003C8D2AC UniRef90_G3TN11 UniRef90_UPIO0038EE4CA UniRef90_E1RK56 UniRef90_F7EL68 UniRef90_F6WFZ5 UniRef90_UPI0003F18DB3 UniRef90_UPI0003F110C2 UniRef90_UPI0003317CF6 UniRef90_G3VRY9 UniRef90_HOWKU7 UniRef90-R7VV80
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UniRef90_I3WWD7 UniRef90-UPI0003991E8D UniRef90_UPI0003F0F395 UniRef90_W5M8T2 UniRef90_G4H7Q3 UniRef90_E6ZI89 UniRef90_T1PFV3 UniRef90_H6TAD3 UniRef90_17HJI3 UniRef90_UPI00038EAF8E UniRef90_F6ULR0 UniRef90_U5RPS0 UniRef90_J7FHW7 UniRef90_UPI00042C0B22 UniRef90_A0A023GN55 UniRef90_D3EEX3 UniRef90_UPI000476D379 UniRef90_W8BMF4





 Q E VI N C Q V E K Q T K G K IV N N L I Q D L K L N S I M V L V N Y I H F

 S Q A R G L M N H Y IIS K E T Q G K I B K L L F D K I N P D T K L I L M D Y I L F
 D S T Q R E I N S Y I S R K T H N I I N N L V K S i di P G T V ML L A A N Y I Y F

 S R LED N A WVEEAT R S K I K DL L P E G S I D S D T A L V I V N A I Y F




## GK V V L L K

EEAKKKINDYVKKGSQGK V V L LVDDLDQDTVFALVNYI F F A A DRTINTWTAQKTHDKDQKILDASDLQPDTRLVLTTNALYF




 AET I STWVESKTD GK I K GMFSREEF










 S R T K I N E WV E E F T Q H K I K D L L P E G S V N S L T K L V L V N A V Y F

 P Q S K D I I N Q W I E N N T N G M I K D M L D A V S P D A A M Y L V N A I Y F
 CRKHINDWVSEKTEGKDSEVLDSPGTVCPLT KLVLVNAMYF









 A D S IN N NWVRDHTKGMDPTVVSSDMLDGALTRRVAVNAIVF
 ARLD I N N WVENQTQGK I K DLLAAHGVVDNMTRLVLVNA!YG GRMEINNWUANLTRNE』PEMLNPGDVTSDSQMVLANAAYF
 TRKTINKWVKE QTGGKI PELLAAPGVLDDTSKLVLVNADYG ARKE INQWVEGGQTEGKIPELLAEGGIVDSLTKLVLVNADYF
 A RKQ I NQWVGEQTE GK IP NLLDSEGSVVNMTVLVLVNAI YF




UniRef90 UPI0003F16B0B UniRef90_UPI00036D6EEC UniRef90_UPI0003F09659 UniRef90_UPI00042ADB6A UniRef90 M8BKV9 UniRef90_A0RV03 UniRef90_G1MYU4 UniRef90 UPI0003F10C00 UniRef90_UPI00038EA7CE UniRef90_UPI0003F0ED70 UniRef90_G1NUL4 UniRef90 G1KCT2 UniRef90_UPI000333DCA5 UniRef90_UPI0002BCF2A4 UniRef90 J9JUU5 UniRef90_UPI00038C1EE5 UniRef90_F6W014 UniRef90_UPI0004419916 UniRef90_G3TDW3 UniRef90_B7Q0E8
UniRef90_P15059
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UniRef90_UPIO0042C0B2
UniRef90_D3EEX3
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K GK WK KPFQEEHTEDADFHVVDEATTVVIVPMMRMFNVHYQE K GD WK T E FKTE QTGDMPFRSGRSKNVKMMRDNTGLRRVFR K G N WE EK F QKEAT DDA P F R L K GDWK QKFRKE DTEMSDFSKKDGSTVVKVPMMKYGYESES F KGKWDKPFDEEDTKDKFHRRDSSTIDVPFMRGWGKQR DAC K GT WE MQFPPEATKMDEWHGE GDAEANYMNVVGDFDYEEY K GNWAEKFEEANTAEMPFRLLNKNERMMYQK KKFRFGY DS D K GQWKKENTKEEEFWLDKNTSKSVPMMTQRHSFSFASSLKD K A QWANPFHPSQTEDSSSYSVDKVVPMMHRVEQFHYQVDM H GQ WQMPFPTSATHRRRFHKSDGSTVVSVSMMAQTNKFNYTE N GH WK T P F P E L G T H H R L F H K S D G S TVVSV P M M T Q T S K F N Y T K GLDWKSRFQPENTKKRTFTAADGKTYQVPMFRCGTTSTPN R GK WQ T P F N P A F T E VD T F H LDDKY R A VK V P L M F A S G T F A S S K GK WE KPFEEEMTTTERDFHVVDEETTVVKVPMMNRLGMFHYC K S D WA HT FKHVYDDFFYVTPSNKVTVKMMTQTRDFQYLHD R A R WQ Y E F DKETKKE EF FVVDKDKTVVKVPMMFRRGLVDVA Y KAKWKHPFNRYQTQKQESFSVDERIPMMHQKEMHRFLYDQ X K K P F NPKYTEERNNYVNPYMVVKVPMMFQMGMFE L GRDD K GKWKKPFEEEKTQDGDFHVDEATTVTVPMMNMFDLLYHE K G L WS F QF NPRQEFHVSKDGTKTVDMMYKQAKFRMSRCDE K A K W L T PFEKEFT SD YP FYVVSPTEMVDVSMMSMY GKAFN H K GDWTTS F DEKK TMD Y P F QLLNGNQTKNVKMMQMKSK DS FR K GS WAEKFREADTTDMPFRLNKTERKTVKMMYQKNKFCFG R GK WK K P F E E E H T E D G GF H VV D E T T T V
 KSAWATPFPKH LTTSTQPFYGAT TTECALMQQERKFRYFEN Q GRWMVP FDPKGTQERDFHCPNMMQMTSRFNYGEFMTADG RGSWKKDF LYYSKTYDAQFWLNKNDSKAVKMMKQEENFVCT K G $\square$ WK $\square$ AF NTE DTREMPFSMTKPVQMMCMNNSFNVATLPA RA RWE HE F DPKATKE EDF ILDDGNKPVRVPMMFHGGMYAVG
 K GKWQ T QFSKDLLTKDEDFKVVSPNKKVVKVPMMTTGMKGFNE K G L WK S R F Q T E NTKMRTKNAGD GNSYKVSMMS QLSVVNDG K GI WNTPFHSTSTFKAPFFNA GTEQMMHGQDTAGYARDDD K G $I$ WA DQFKAENTKEMPFHVTRT DQVPMMNRQFECRYAS L K GEWKQKFRKEDTQLMNFTKKNPMMKAFLQTNYGYFSESS

 K AK WK T P F D P H D T F Q S Q F HVVSK R R RVMVVPMMKVENDLWTP Y $K$
K N W H K Q L K GTWVLQQFDKNMDFTTPSGETVTVEMMKRTDDDADVYGTE K GNWKSQFRPENTRTFSETKKDDESEVQQIPMMYQKGEFYYV K G Q WD E K F D K K R T V E E K F W L N K D T S K K S V Q M M K Q T R S F N F T
 K GNWEQKF QKENT QLLMNFTMK D GATVVN1AMMKYGYFS E S S K GQWK LPFPAK GTHHRLFHKSDMMAQTNKFNCTEFLTPS G K GNWQNQF LKEATANVPFRLDKKDTKTVKMMYQKKKFPGG K ASWE YKFEQKTVQKDFKLNQNEKKPVPMMYQKGMFKLGF NALWK HAFKNQNTTLTT FY $\square S K K S S V N V P M M Y Q Q N K Y K L C$ Q GRWE HEF $\square$ MDTSPYDFHHSNGRTS KVAMMYNDDVYG LA E K G N WMRKF DS SLTA AVEPFYKQKNVNMMHDDAEFRTGYIES QA QWENPFAPS KTEEGSSFWVDKTTMVKVPMMHQTEQYYH K GKWE DQFSTNTKKEDFTLSNGNKLNIDTMQNTSYDNYLE K GLDWKSRF QPENTKKRPFMAAD GNSYPVVMFRCGSTSTTSN
 K GGWAEKFDSDAT QSRPFTLTDGSTMNVPMMRKNLKYGAT K GK WKA QFDRKYTRGMPFKTNQEKKTVQMMFKHAKFKMGH

 K G D WF K K F D K K K T Q K LD F F L E Q K
 $K$ GLWK SRFQAEDTKMRPFTSGDGTVHKDPMMSQLSVFNDG K GNWDKQFRKENTKERPFNEEKPVVQMMFKKSTFKKTY IGE
 K GD WK DP FKTAN THE ENFAGATGTNSVVKMMSMTE KLKY T K
 KAYWENPFNDKGTRKDYFHVNAKNSVVEVKMMTRDGFYKTY K GRWSEQFDRKHTRGMPXPVRKTVQMMFKQAKFKMGYADE K G LDWK SRFQPENTKMRNFTAGDGKVYRDPMMSQLSVFNFG GGWKD E F D P A N T V D E S F T LAA N GN S K Q I P M M K R E G K Y E Y K E $K G Q W S D Q F D A K D T K Q D F Y T T P S Q Y Q F V P M M H K R G V F N M A V$
 K G K W K GNWAEKF DEKATSSDKP F R R L N K KE QK TVVRMMY QKKKLDP Y G $\begin{array}{ll}K \\ K & K W K N G F \\ K & \text { G K WA T P F }\end{array}$ K GNWAEKFKEANT T QMPF RLLNKNE QMMYQKNTFP FGY DS E X X L W D A P F Q A T E TKK K P F F NA G T Q S V DVV M M HA R L R V NGGWTDEFDPANTVDEEFTDTDGTTQQVPMMKREDRYSYK K G $\square$ WTSEFDKKNT SERP FTYENGTRKNVEMMKQTAKTNYT K GQWSNKF DAKWETPY

UniRef90 UPI0003F16B0B UniRef90＿UPI00036D6EEC UniRef90＿UPI0003F09659 UniRef90＿UPI00042ADB6A UniRef90 M8BKV9 UniRef90＿A0RV03 UniRef90＿G1MYU4 UniRef90 UPI0003F10C00 UniRef90＿UPI00038EA7CB UniRef90＿UPI0003F0ED70 UniRef90＿G1NUL4 UniRef90 G1KCT2 UniRef90＿UPI000333DCA5 UniRef90＿UPI0002BCF2A4 UniRef90 J9JUU5 UniRef90－UPI00038C1EE5 UniRef90＿F6W014 UniRef90＿UPI0004419916 UniRef90＿G3TDW3 UniRef90＿B7Q0E8 UniRef90＿P15059 UniRef90＿F8EDV5 UniRef90＿UPI000386F125 UniRef90＿UPI0003340CFE UniRef90＿H2NM57
UniRef90＿UPI0004422E40 UniRef90＿UPI0004157DC7 UniRef90＿W5N9L0
UniRef90＿I3JZB2 UniRef90＿P01014 UniRef90＿F6S634
UniRef90 P01009 UniRef90－E4TH65 UniRef90＿B5X2K0 UniRef90＿G3MLS9 UniRef90＿UPI0003343826 UniRef90＿S4RUS7 UniRef90－D4KMK0 UniRef90＿R7UG47 UniRef90＿UPI0003C8D2AC UniRef90＿G3TN11 UniRef90＿UPIO0038EE4CA UniRef90＿E1RK56 UniRef90＿F7EL68 UniRef90＿F6WFZ5 UniRef90＿UPI0003F18DB3 UniRef90＿UPI0003F110C2 UniRef90＿UPI0003317CF6 UniRef90＿G3VRY9 UniRef90－H0WKU7 UniRef90＿R7VV80 UniRef90－T2MF56 UniRef90－E9HI86 UniRef90＿UPI00044463E7 UniRef90＿A5N921 UniRef90＿G3SL81 UniRef90＿UPI0003665B1A UniRef90＿G0J4J0 UniRef90＿UPI0004729037 UniRef90＿O08800 UniRef90＿UPI0003C28711 UniRef90＿T1GCP9 UniRef90＿UPI00038F77DC UniRef90＿17M668 UniRef90－V5HB59 UniRef90 H2TQ93 UniRef90＿U3BQ61 UniRef90＿UPIO001CBAA24 UniRef90－12ETU3 UniRef90＿I3WWD7 UniRef90＿UPI0003991E8D UniRef90＿UPI0003F0F395 UniRef90＿W5M8T2 UniRef90＿G4H7Q3 UniRef90＿E6ZI89 UniRef90＿T1PFV3 UniRef90＿H6TAD3 UniRef90＿17HJI3 UniRef90＿UPI00038EAF8E UniRef90＿F6ULR0 UniRef90＿U5RPS0 UniRef90＿UPI00042C0B22 UniRef90＿A0A023GN55 UniRef90＿D3EEX3 UniRef90＿UPIO00476D379 UniRef90＿W8BMF4

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 PAYTAFELDPYANGNFVVMVLLPAENS SDNSLDNGAEWTALVQ
 H DGFKVLQLLRYRRRYSMCI FLP DDRDGLS QADPDFLRE HL
 LQ A KI L GIIP Y K N S D L S MFVLLP D D I D G L E K I I N K I E WT N P


 $F D V N L R C H L P Y R G N A T M L V V L M Q R L G D E D Y L T T D L V E A C L$

 ERF C T I L K M P Y E A H DA A Y F L P D K G QLDERVAS C G V L R T WK


 Y I P E VK I RP Y D GRELSSMII L LPDDDEDD STGGLQK QE WT CP



 HCKKL S S WMK Y L G N AT A I F F L P D E Q H L E N E L T H D I I T K F L



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 AKVLEKRYARAAPTHRPEWA LDPLARGSSRLAPGRGWGPAA EKMTQNYVKVKLPRFK IIDSSLELDKTLSNLGCPTMFTPGA S L L A K R VVVDLWVPKLHI S S T Y N M K K V L S R L G I S K I F E E H G QL L L P P S L L D L S I L S K S SLV NVVY P K C L V S G E $\square \mathrm{K}$ L K D I M Y S M GLLVDVIF T D K A TDRQRRSAIL S FPK LISI S GT Y D L K NLLLGK LGGI THVVFS D GA

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 D S LT Q GPVDLVLPKLSI S GA YDLRAVLADMGFADLIFSNRA

 Q NMSKR LV N L Y Y L P R F K L E E S Y E L K D I MM S L GMLDSF S P Q D

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 T E M T S G L SP QKMPRFT L RYGKT L N DV L K D L GMG VAF T GRA KLMHMMK R LLDPKTAA A EVDLK GSLSAL GLLTDMFSERA

 K L L E D R WQ WQY P KFKFFF DT DL KPTLNKMG ISAMM S A A



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D L S G M S GA H D F L S K I V H K A F V E V N
A D Y S G L S L G S GL Q K FL HAS F V A V TED GTEAAAAT GVGFVL
 A N CLSEPTPRNLKVSEVLQRTVVEVDEQGTEAAAGTLTEI
 D L T R I S S S H R S K VV G E A V H Q A E L K M D E K GM E GAA G S G A Q
 D S G T Q P Q H R L
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A D LT K $\square$ N K A GK L N V G F V K T Y V A V D E K G T E A A A V T T DGVE L A NLS GMSRDLLFLSIVVKAFVEVN



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DL S GVVT E EAP KL SKAVVHKAVL T IDDEKGTEAA GA


E D GTKAAAVTTA I LM


## D D M A A <br> M D D A N

DLS G MT D S EVVYI S



 L S A MS F T NTLL
 A DFSGRVR

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LCN N N P S K N VCY S P $\square$ N $\square$ S S A LA
A EANGTFALNLLKTLGKDN SKNVFFSPMSMSCALAA





 EAEGLFGDSVFHHLDEQQGTENVFDSPYSIQQALV NSLLSEANTKFMFDLFQQFRKSKEN NIFYSPISITSALGG



 N N S H F A F R L V R E MV A A N P G R NVVLES P L S V S I P L T


A S NLEF GLDLLY Q QLS N A S K E NFF F S P T S I S Y A LA APGTNGFAFDLYRALAAAAPNQNDFFSPLSI STTMAA $K L A Q A M M A F T T D L F S L V A Q R A T S P N L I L S P L S V A L A L S$

$K 』 T P A N A D F A F R F Y H L I A S E T P G K N I F F S P L S I S A A Y A$
FTAAGNHDFTSSRLYY T E V LLK E N Q N K N F L F S S P L S A E I I L S
 M S P L S A D I V L A A $K \square T$ S A S N N L G L R LFP $\quad L \quad L P$ S P P E E NVF F S P CS L S V A M G KLT R QNMDFGFK L L K K L A S N NP G R NI L L S P L S I S TA F S
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 $M V \operatorname{L}$ L G A R GTTKKA QMSKAVTHVKKVTKAGRERSETLDHFDAK

 MVSLGAAGNTATGMSEVLHHNKAKDDVHELNKAGAP YALS $M T L L G S N D K T A T Q Q Q D D A D H Q S M K L F H E Q L M N T G N K H T L N$ $M V Y L G A K G D T A T Q M A K S L S F T R G E G V H A D F Q N L N T D D N S P$ $M V Y L G A K G N T A T Q M S E V L G L S G N G D V H Q S F Q T T D T Q Y L L K$
 $M V S L G A A G N T E A Q M S E T D Q F N K A K V D D H D L D K A G A P Y S S L T$



 $M V Y L G A R E N T R A Q I D E V F H F D K D A G F G D T V D P Q C D N Y S L N$ VVAAGANGSSRAELDTALGFKELLHGKKKAKSMKYFARLN $M V L M G A K G N T A A Q M S Q A L C L N K G G D I H Q G F Q S L L M Q C L L R$
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 M LML


 $M$ L L E G A G G K T E A E I 1 R K R D Y R E QL H L
 LA Y M GA G GQTASEMAKGLRFGSMTKDQVADSFSKVLKDSQ MCAEGASSGDTYEQMANDI AP GVERDDDKQDAAYFVSDTMH $M V L L G A K G N T A A Q M K D E V D H Q G F Q A D L T E D N K P G T Q Y V L K$




 $M V Y N G A N G D T R S E M D Q A L Q L Q G I N V E D F N R Q N A A M M E H F T$ $M L Q L L T S E N T R N E L V T S M N Y D D D H D N D Y \square F N D \square F V D K S \square Y$

 L V Y M GA RGKTQS QME KVLHFDNVTGDGE DSDSQCGTPEYR


$M F L L G V K G N T E \square Q N T A D D \square H Q S F L W \square L N D L K K P T R K Y T F R$ $M V Y M G A K G N T A A Q M A Q I L S F N K S G G G G D \| H Q G F Q T Q Y L L R$ $M \bigvee N N G A A G G T Q K E \square N D M L G F K A \square N E F C Q K L M E G A P N D D K S$ MTANGAGGNT LMMQMENTFGMPTKNVNTFAYKNTLPSSEKY $M V L L G A K G D T A A Q L A Q V L S L N T E K D I H Q D F Q A L L A E L N K P$ QLALGAAN QTEKRLLE ALHLESVPCLHHLLSSSIRRQQLTG

 IL QF GAQGNTGQQVHDPKVRDFLHAVYATLRNSSHVSEME HL LLGATGNTHA ALDKRALCVPHDFNCVVSQMMKKQKEKMG
 $M$ TANGA DGKTKE EMKNTLLLS EMKDRE ENEAANTLMNSFR







 HLALGA QNQTLQKLLQQLHADSGPCLPHLLSHLCQDLGPG $L L S L G A S A D T Q T R M L E S L G F N L T D T P A P D I$ HRGFQSLLHT



 MAYAGARGETRQE LYDHLGYDAYARQMQRHQPGQSNTTDD


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 IA N G V F A E K V F D L L H K N Y I D C A Q K L Y N A K V E R L D F T N D V E D SS K R V Y VID NS DE CKK D Fi N S A K K P Y P L E L E T I D F K S Q A E E $\square A N R L Y A D K T H S$ I L P Q Y L Q C T K R M Y Q A C L E S V N F K TAA E E

 I A N K I Y Y V Q Q K D Y E V V Q D E Y N K L L L $N$ N E K F F S K K A E E


 LAN R F Y Q Q GF S T K E S F A R TLIK F YY G E T

 VA NTAA DH L G L P L L N E Y EA T L R N S F N A D L Q K V DF V E N G Q G

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 DA NS SVWANESVVGGDGLNANYMSTLKNYYSAEAFSEEATG



 TA DK QTM DNDA NY YAA DKHFSSLK S DFRN TVVGKMYDA GVE S S Y A N C I Y V A ER Y RFIDQAY Q E L A G K Y L R A S A E NVN F G E RM K


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 STRYLLLRTANKLFGEKSREFLSTFKESCLRFYDAELLEQLS


 TLLF D GELLLAAH SVVWTGLDDNPQFKQTDEQHFDGKACK LGP
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$\square A N K L Y G E V S Y K F K D D F L Q N C K K F Y G A N V E S L D F K N Q P S E$
 AFR LA A RMY L Q K GFP I K E D F L E Q S E QL F G A K P V S L T G RK

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 QGFWRHKFDPSQTGPD DFHLDDQFIVPVEMMKAQKYSLSW KGSWTSPFDEYATHRADFHNKKEVDMMYKKKAYKMCTNDE LNPFESQFTEKRKFFNDDGDETYVPTMHKTFNVLHGHDKS SGQWKFKFNDKPKKGLFVKFSGDMVRIYNSKYMATMTYAP $K A K W E T S F D H K S T Q E Q D F H V T S E M V V R V P M M R H E E Q Y Y Y D$
$Q G D L A Q P F D K A M T Y V E P F Y L Q N G T E K K H P M M K Q T A L L P Y Q$ GTIGNDTTLVLVNAIYFKGQWENKFKKENTKEEKFWPNKD DAKWATKFEDTRKDVFTNSKGEKENITY LDCGERHGGYFED KGFWEFPFEK $\backslash T R P Q N F F D D S N K S V M V Q M M R Q M G A F K A G H$ KAKWKHPFSRYQTQKQESFFVDEQVPMMHQKEMHRFLYDQ K GLWKSRFSAENTRREFHRADGQDCRASLMYQEGKFRYRR EGTWEAPFEKAETKEENFYTRDQKRVQMLHQEDDFSYDSN K GKWKHYFDPK LTEMRPFSVNEKQVPMMHRQGYFQLQYFR K G LIWKSRFQPESTKKRTFVAGDGKSYQVPMRSGSTRTPNG K GNWHKHFNKEHTKEDPFKISKTEEKPVQMMFKESTFKDT K GAWEQKFPKEMTHYRNFRVNEKTNVRVPMMTNKGNYLAH GDWNKKFNKNETSEQHFHVSEDTKMKVPMMYFMEDKLKYC KAQWETSFNHRNTDEQDFHVTSETAVRVPMMRREDWYYYL QGFWRSKFDPSDTQRDSFHLNEEFTVPVDMMQARTYPLRW $K A K W K H P F D R Y Q T R K Q E S F F L D R R I P M M R Q K E M H R F L Y D Q$
$K G R W K K P F D S S R T D T R N F Y V D E N T V R V P M M L Q D Q E D H W Y ~$ KGKWASNFEEYTRKQKFYVTKENTKEVDMMHQTGYFRYYE WEKPFNPTYTSKMYPFVVGKTTVKVPMMHQVEQFAFGVDP $K A D W K S P F K A E A T Q D G T F Y A P S G E I T A K L M S Q K K A R Y L S R$
$E G K W E L P F D K D D T Y E G T F H G K D A D S T A D M M R M Y G E R F R Y M$ EGKWEDPFDKDDTYEGTFHGKDADSTADMMRMYGERFRYM K GQWKNKFNPDYTKDMPFHVNKNTPTMYKQGKYKYGELSN K GTWETEFEKKNTRNMPFLNGGVTQTMVEK DR $\square R H N S F E D$

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 LDVAA A V E DP Y Q G G K T S MVVL L P N D DE G L S S K L E D L L T A P K L






 HLLH S Y V L W WL P C R C N A N T V FIILDPN M E T E E A L L




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 $P$ K
$P$ D
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K HMKKDFYNI IIPKFKYEYEDNFKNDFNKVGDYDDFDDKA
 ARLQRQNVLVRLPKFRDEFDQDMTQPLKQMDVQEMFGPKS KVMEKK RVRVY R P RMKI EQKYNLTSVVTSSLGMTDDFSPRA





$K M F Q M$ RQLVKA
EKWENR K
K


D AVDP TLLD
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GA A SQGAN TV N L F
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VANKVFVGKDFKVKPDYZTTVKKNFNTGAENVNFASPEAV



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## UniRef90 V9VJE7

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 H LPC S V L WM D Y K G N A T A L F I I L P X G K M E Q V E E V L T P E T L T R
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## F



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| UniRef90-O1 |  |
| UniRef90_F6YK01 | MI S LGGLGG STHEQVHA ALHFKD F H NLFRKLTHRLFRRNFG |
| UniRef90-G3NZC7 | ALLMMGSAGVTHEEILKERADQPELIP G L L P QL LHENDT Q G G |
| UniRef90_T1IF83 | LAYAGAKENTATEMAKT LHLLPEKLDDHKMLI EQLDQHPTLCK |
| UniRef90_B3DM34 | $L L Q L S L G G A G K E M Q N K L M E T L H V E S L L H C L H N K L K T R K E L S K$ |
| UniRef90_T1GWX2 | $L A Y M G A G G E T A S E L A K G L R F G S V T K D E V A N S F A G N N \square G D L$ |
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 $M L S L G T R S T T L S N L V A G L G F D L Q R \| R A W E V H T S F Q R L V Q T$


SATFRLANR TY LDERFHVSTKYNEDAVNQMHANAENVRFA LANAAVLDQRLNADSSYLNALKNGFAAELLKADFSGDERA
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 $K L D V G N T V A V H S G F S P L E R F W N D V K Q H Y S G E V L Q I N F T N P$







 $M K \square A N K \square F L N K N Y V V G E S F A Q L S K K S F N S G A E N$
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 Y LA N S I WF K N T E K F KVVNDKFL ETNKKYYSSEDYKSAFDD S FANGLWLNQSHSPKHSFKHDVETYYKATLRQADFHTKGEE LA C T L F V Q A G T P L S P C F V E Ql S Q WA N S S L E PA N L R E P N S T



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UniRef90_D5SHI5

130
140
150
150 LIMANVD 160
ESAYVINSWCNNVTHGRDTQLVNEGNVQNNILLMANVLYF

 SSNQ: NEFVNKHTNNKIPKLFDENAFNALTRLVLVNAIYF ERVTLDNFASDATKGQLKDLLPPGADDDLTRMVLLNAAYGL DATATAAATNSWVEAETDNKTPANSDDANTAMMLVNYYF TATATAAANVSWVEAETDNKLPANSLDANTALVLVNALYF SHTLTHTNDWCNRQTNGMDSSILDKINPSAVAYTLNAI YF VTSEANSWAEKETNGLIGKEVLPPGSVDSSTRLIFANALYF AEAAGKINRHIANKTQDKIKDMVNDVDRETMMMLINYVYF QLRKINRWVSSQTMGKIPELIPDNVLTADSVLALINALYF
NGFHINDEFLQTIKKYFNAEVNHVDFGQN VIVANHNK SQPKPSDEQTGSSRGSGEAQVEAPGWSHRQQMALVNTVAF STGQDNKWVENKTSNDIGKDLLPKEFDDKFTVAVLVNAVYF SRKHDNTWVAEKTEGKTAELLSSGSVDPLTRGVLVNAVYF AKTMNTFVENHTNGKDKD DSKGSDRFDNEYIKNKTRDKDMMSSLDAMTKLMLIDTVDF SRNEIDQWVEEKTNKKDKDLLAEGTITPLTRLVLTNAIHF KKNLESTNKWVKDDTEGQDPHFGSDLPQDVLLILLNAMHF ERERINEWVAEATEGRIDELLPGGSIATQTVLVLTNATYF VRKKVNA WAEKETNGLI KDLLPPGSVDYMTRLI VANAVYF VRLTUNKWVEEVTNDKIKDLLOSGTLTPSTVMVLVNAIYF SEAVGK NNRHDATKTQDKDKDIVKDLDPSAAMVLINYVYF VANHANSWN QWTAHQTKGHDDDIDDRPEAVSLLINAVYF NSYETINGIVSNATKGQDEKADHPSDLKDAKMLI LSVLFF VRREVNDVVEKETNSKIKDLIPSGVLNSDTRMVLVNAVYF VVLLEVNSWVKDKTKGLI T DILLRGGVVDRETQUILVNALVF NIGVNEWASRQMAEEGQPGDNPGGLTWERQLALVSTMSFQ EEDLMNDNKWVKEATEGKDEDFDSEDPDNTVLLLDNADHF
 VANEVNAWAEKETDGLIKEVLPSGSVDNSTRLVFANALYF SSQLNEYLKEKTQGKTSDLFLETESPDTLILINYVFFSGT VAAGVNLWAEKETSGLI KEVLPVGSVDASTRLVFANALYF
 GACRRINAWAARVTHGLLDGVLGPDSVTEETLVLGNAVYF
 VRAQINSWVENETERKI QNLLPAGSLDSHTLLVLVNAIYF ARLEVNHDIVDTTQWKVRDLIGRGQVNAYTRLLAVSSLYF DFERKEEVVEEVNTWVESNLIKPNHINDKTKVILTNALYF AAKTMNGWVEEHTKSKIKNLINPNALDNHTRVVLINALLF ARKETNKWVKGQTEGKIPELLASGVVDSMTKLVLVNAIYF FSLDNRNNRTRRGVFKFLFLLKQTLSSSQKQMALVNTVAF ARKHINKWVEEKTEGKIVELLTNGSI DQLTSLVLVNAIYF TAEHINTWVEEQTKGHIIKDLLSSDSLDASTAAVLINA:CYF VIDEVNTWAEVHTNGLI KQLLSRDDTDRSSTLVLANAVYF
 $A A Q D V N N W V R D M T E D R D P E L L E R P L P P S A P L L V L N A V Y F R$
$R T F T Q U N E D I V R A T R G L D P S V Q P Q D F E N A A L L M I S A L Y F$ ARKQUNNWVEKKTHDKIKELIKPPMLNSLTTLVLCNAIYF AVAQEDNSFVSVATKGRIDQIDPSDLLDADMVLVNAAYF $R T A E R U S K V V E T K T N G K U T D U L K S Q Q L D D L T E G V I V N P W Q$
$F P T N F H N G Y V E K K T R G K I D E V$ FPTNEHNNGYVEKKTRGKIPELVSSLYPNTMMVLVNYMYE SSVVNQNNFASVNTKGRITDLVSFDDILDAHMALVNAAYF
VRTRUNDWVSNTKGHDRDLEPNSSSGDTDLVLANAAYF FYSPDSVIQINEDTNRTTRGLDPYTVDPQDVMFLGSSLYF TRLLQNKSVSDLTDGKMENVLIEESVNDQTKIIGINAAYF PQSVNIINDWIEKQTNNEIQDMLDRIPENAVMYLVNAMYF DLLSRVNGEVSRLTGGRIQDALRRSPDPLSKLLLLNAVHF VTTQVNSWVEKVTSGRIKDILPPGSIDNTTKLVLANALYF TAQKNNHYVENKTNGLIKDLISPKNINNDTIMILVNTVYF AVQHDNNWVSERTNMIVTDMLKEGDISTNMSLLVLISAFS I ARQEI NADVAEVTRGLI PELVKAGTVDSETVAALVNALYL QRVYI NRWVENVTRGQIKDLLIPGAITQNTQLAI ANAAYF VRYEVNSWVDKKTSGLIKDGLSPGSVSRKTDLILASARYF NTVKDINNWVYNNTRGGIGNI DEKIVEPYEDLFLDNALLF VTKEVNAWAEEKTNGLIKEDLSPGSINADTALEFANAVYF

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UniRef90_UP1000258E11 UniRef90-L7LQN0 UniRef90 EOVI38 UniRef90-U5WT63 UniRef90-C5LR10 UniRef90 ${ }^{-}$W5KQ73 UniRef90-A0A034W7N5 UniRef90-V9VL13 UniRef90-V8BUZO UniRef90-F6H1E8 UniRef90-O66INO UniRef90-|31Y10 UniRef90-G7YPF3 UniRef90-UPIO002BCDBAE UniRef90-H2UBC7

## UniRef90-M9ZRP7

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UniRef90 D3TML2 UniRef90-D3TML2 UniRef90-L5LD55 UniRef90-D1MX62 UniRef90-E2A358 UniRef90-Q0E8C8 UniRef90_G3MFE9
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UniRef90_D5SH15

NGLDWRTPFNNTKEG|V|FFNTPKRQLLRADFMEHTDSFYYYN D K GEWKYQFPKSATRDDDFY LNEVDSVRVPMMNFGYGVISE

 K A S WESPPFPKE RTAD GSFRRVTPRQSADVTVPMMHKARRYVAA $R P$ M K F E LDPGGGSK LVPMMVAESKDKKGGMK DFDYYSD K GK WKKPFEQRFTQKADFHVDDNTKVTVDMMQNTGRYHFY KAKWLNQFNHSTAKREFHTSAARKSEVDMMKQTDTE LYGD $K$ GTWLS KF D Q S K T S K A P FYTA D GRST SVVDTMQGGYAYVR N $K G V W S T P F D P K E T K E K P F T T A S G S K Q Q V Q M M H M N D Q L A Y T$ K GA WN E K F DA S T K D Y D F H L L N G S S V Q V P F M T S K K K QL DS T K G $\square$ WK NT F D P S LT S E D T F Y I N D D D GI QVEMMNAPKYP FS W



 R GNWDE QF DKENTTFKVVSNE EKPVQQMMFKQSTTFKKT Y I G E



 ESPFPNLNTRQMEFFSSPSVGKNVDFMYDDEYFYYGELDD MAS WYQ QF DPADTEDDTFTALDDSTVPFMHQHLRTNYA AV $\begin{array}{ll}K & G A W L D \\ K & \text { K }\end{array}$
 RGQWERPFNKNVLTEKADFHVDENTKDMMKKMGRFDYY HD H QEKWS LP F D R HV T A E F F LP D G S S K K LLMMM Q T A R LAA Y LE N K GNWKSQFRPENTRTFSFTKDDESEVVQDPMMYQQGEFYYG
 K GLDWENQFNES DTHDQEFWIDSSQEPMMHIKKKKFRYF NHRD FEADWSDKYTTTYSGKFTDLNGAEHDVTKMSNTEYEYTDD K GVWTNKFNDSETKKEDFYLVDGSSDKTPFMSSSKDQYAY S T WRQRFSSRDTGQLLPFTCAPGQVLQVPMMYQMAEVVNGQQ H GFWRTKFDPS LT QKDSFHLDEQRTV PVAMMHAQSYP LRW QGVWE TGFDRNSMEDKPFHLDDQSVKTYPFDSRYGTYNYT K L WK S K F NPENTK K DEDFF LIKPSSNCSVPTMYQEGTFRYGS K GVWMNPFTSSEKTSVVRFYQTNDKCVKSMAMYFNLGY IGDR K G R WE E QFPESNTTMMPFKDNRKEQMMFRRATFPWAHVSE K GA WTEKFDAS ITTKDHDFYLLDNGSSVHAPFMTSKKKQFAF WE K A F NP E DTR L A DFF DD DGS IVQQVPMMFQSNEFKY LY DS
 K V Q WA NPFDPSKTEDSSSFLLDDKTMTVVVVPMMYXMEQYYH KTAWTNPFSRDNTAPADFHAPSGTRTWVTMWLEKQQDHTH KAKWKHPFDRYQTGKQTSFSADDRVPMMQQRAMHRFLYDQ K GRWGQPFNKRRTIVRPFRRLGVPFMRSRKPQFVALHRGF

 K GE WGSKFKPMQTKVSNFHRT DAVVMMQQRAEFRDAVCDE K GT WNF DQERT DDKD FY LLDNGDKISVPFMT GCYD YKYGS F K GNWEKQFDKEDTQEMPF $K A N W S V P F Q L S L T Q K G K F Y K T A S D F V E V E M M Q Q L E Q H F N Y$ K GNWKNKFMKETTDAQFRDNKKDTKKVKMMHQKNKYPG GY
 K GKWQNQFEKHAT KERMFK】NKDKQKPVQMMFQK K GNWQDF E EYQTEP PREFTSQS GQKVVKVDTMYQSDYF QYA D K GKWDEEFNPNLTRPDPFKVSPSNTKDVPMMFAKRKFAFB K GAWSSKFDANMTKKNDFHLLDDKVPFMTNYED QY L KRSYD G

 K G DWLS QF DKAKTFNRDFHVSPNTT IPMMYQQTRDKYKCF K GTWQFQFKASDTFPEPFYNS DLVPMMHQTASSFRYNEFPE KAFRADKTTKRDFSDGNNRQTFKVDDTMWSLDNYKYGEFSN KASWENPFNPFHTREEDFLVDEKTSVKVSMMRQDTDYESH S A K WK T P F D H K K T R R E P F Y L K S S T I K V P M M T S K K Y P VA H F $\begin{array}{ll}K & G T W Q F Q F K P S T V V S E R F F \\ K & V \\ K & T\end{array}$
 K G L W W L LQ F NA S RT R R S DF HN K DEVVDMMY QK GTYKM G G S F E $\square T$ NWMKMFPE GQTKECPFRDSKTETKPVQMMNLEATYDND K A D WKY QF EAKNTKNEPFFPAPGQSDQVDMMDLGFKVAFA K GVWEK AFNPNDSFDGGLRGATMNTPVRMMSGKGKFPLAY
 K S K WK Y GF DVNKTFREKFGSEKKVV DLMNN QNYFNYYEN QSTXQRTSSMDSQPLPFTCAHGLILQVPMMHQMAEVNYAK RGDWQESFPKENTKERPF LKGGGUVEDDVQTMYTEANFSYK K GSWQTKFKGETKKEVFYSYGGQQDFVDMMHVEGTFSHA K GA WN EK F D E S M T K E F D F H L Q GF M T S S R Y Q Fil Sivi D S F K V
 $K$
G D WEFK E Y M N R DCKKF L


## YECPHLKAPFKGGEASMVFVLPNEKDGLAETQLDSVFVPQ

 TRELLKCRVPYEGSDLSMVILLPDDTEDDSTGLRKNEWTRP

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UniRef90 A0A034VSS2 UniRef90-A0A034VRH3 UniRef90_UPIO00258E11B UniRef90-L7LQN0
UniRef90_EOVI38 UniRef90_U5WT63 UniRef90-C5LR10 UniRef90 W5KQ73 UniRef90-A0A034W7N5 UniRef90-V9VL13 UniRef90-V8BUZO UniRef90-F6H1E8 UniRef90-Q66IN0 UniRef90_13IY10 UniRef90-G7YPF3 UniRef90-UPI0002BCDBAE UniRef90-H2UBC7 UniRef90-M9ZRP7 UniRef90_UPI00046BC21A UniRef90_UPI00029D98C8 UniRef90-O17365 UniRef90-F6YK01 UniRef90_G3NZC7 UniRef90-T1IF83 UniRef90-B3DM34 UniRef90-T1GWX2 UniRef90_F7PP19 UniRef90-A0A022QBM8 UniRef90_17MHL9 UniRef90_G1LZX1 UniRef90-M4A8C6 UniRef90_UPIO002888AF3 UniRef90-UPI000388BF12 UniRef90-B0X107 UniRef90_V5WCC7 UniRef90_UPI000463A20B UniRef90_UPI0002B43992 UniRef90-M3WPN9 UniRef90-Q68FT8 UniRef90-B1WU01 UniRef90_G5E3U3 UniRef90-EOVLN3 UniRef90_UPI00038F0FF8 UniRef90-B9R718 UniRef90_UPIO003319148 UniRef90-HOXFU4 UniRef90-UPI0002C35F7E UniRef90-UPIO001D38C36 UniRef90-R4T1W9 UniRef90-HOVAC9 UniRef90_UPI000234F385 UniRef90-UPI0004714307 UniRef90_ROJP17 UniRef90-A0A023FL93 UniRef90_T1IJM9 UniRef90-M1AUC7 UniRef90_UPI00038C184C UniRef90_UPI00046C0F4E UniRef90_UPIO00333D0CE UniRef90-H2UBC8 UniRef90-W8BSP5 UniRef90_G3VEM4 UniRef90-B4MJS5
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UniRef9- 2 2A358 UniRef90_E2A358
UniRef90_Q0E8C8 UniRef90_G3MFE9 UniRef90_UPIO00441E0F3 UniRef90-M7X966 UniRef90_A0A023FQ10 UniRef90_C1C4M6 UniRef90_Q41593 UniRef90-H2EAB9 UniRef90_UPI00034FD64E UniRef90-R7U527 UniRef90_UPIO003714DC4 UniRef90-W5JHA9 UniRef90_UPIOOO2C33221 UniRef90_R5FSL1 UniRef90-A0A022QCK1 UniRef90_Q16P31 UniRef90_D5SHI5

K R M Q WA MESVVKMPKFKFDFDKNLLKPT|L QA 270 RYLMHTKVIVKMPKFKAEYDIQLNDALINLGMARMFSKNA
 NSLYPKELNLTMPKFKLEQTLNLGSSLKKVGLNDMFDSKA $D L A F V Q G P V D L S D P K F R Q S W G P F K E T L A A M G M P R A F D E K Q$
$S G M K R T P G V L M M P K F E A E Y G V E$


 NSMPVPVGDFRGPRFKDSFGFEASKALKGGLGAASMPFTENE
 LHS ILLQKKFRDTKVIVRLPRFKLKNLLKACGLTALFDEAD NSVKKQKVEVY LDPRFTVEQEDDLKHVLKALGITEVFDKNA
 P Q ELLE C L L
 K S MTNRTREI RLPKFKLEKNYNLVDTLKSMGITELFDHNG KKLQKSTLEVNLPKFKMESSYSLQNDLPDFGMASIFSNTA


 HDLRQNAHETKIFKDEDPSANSLKFILSKLGLKKCFQGDA S SLRRARMDVFLPRFRDQNHFNLKSLLNSWGVTDDFDPDK
 NS FQPKAVK L SMPRFTLNGSYQVK QAL REMGMESVFSAAD







P | $\square$ |
| :--- |
| D | H






$H Q L K S T F D N V V L P K F R \| E S E D D L K T V L N K L G V S K V F D E K Q$ E NLS Y DDVNV SL P K F K L E E T Y T L N S HL A HL GMQDLE D S S K


Q K L K R Q K VEVVQLP K F K Y E F D $\square$ S LQ P V LE K L A L VS L F S G E A
$P L H C \square S V G A F R \square P K F K F S F E F N A S E V L K D M G L T S P F N N G G$

 MKMDE GLVMVNMPKFK T $\square$ S EFELLSRTLYDMGMPDAFS LPP

VTMTA QKVEVY LTPKFS VSFG $\square N L Q E P F R K \square G \square T T M F T R E G$
 K KLE MVK F QP TL LMLDP RF K LIK S NQDMLLIDMEKLEFFDFA Y

RASEDNEVEVMMPKFVTATDFTLKGVLIQMGDRDLFDENT KA I LGY L HS TY LIPKFKFEQTDFLGNTLQAMGVSDFFGANA S VMANSKVVNVFLPKFKAESEYDFKP LLES LGMTHMFDEDA SWRRNSTETNLI LKMPRQKMDNMKDDLIDEMGLVKPFS F S R



 E GL Q M T S M K V S L P L L N L T K S V D LAA G N L T NL G DD DLDF VGH D TAPQQRQVELRMPKFEVTGSAELNEPLTALGMRTAFTPEA NDG\S R KVVDVKLPKFS I EK QVEMK PVLERLGMGQLFDQSA




$S G \square A G E K G D L I I D K V I Q K D F D D V S E E G D E A A A A T Y V L I$ A DLSS GMS R DLVYVSKM I H K S F V E V N

NFNS L LQ S PA H $\square$ SE VKHKA L IE VNEKGTTATGASFSKVVL
GLTEMVDSPSYVSS ILHKACDEVDEEGTEAAAVSVGVV

 TDF S GMTGVKDLLFTWQFWKDI
DFGNMYRMF HY I N S A N H K A Y VE VT E D G T E
$D L N L C E D P D L Q Q S A M M H$ QA AL E L L M E S G VEA VAA S S $\square S V$

ANLDRMSSGLFAKLVVHSTKVIVDEQGTTAGAVTEA
DLS G $\square$ S D A GNLVS DVV H K A F V EVVN
S D F S EMM E S KV L S K V I H K V S L E V T E E G A E
ENF T K L F S N P KI S R V I H D A M I E V D E K G S E





$D F G G L T E K P L R I D T A D V E A V L R V D E N G L E G A A A T A A M M R L$




| UniRef90_F1QV84 |  |
| :---: | :---: |
| UniRef9 | D5EX65 |
| UniRef90_D6WWH |  |
| UniRef90_G0NEJ4 |  |
| UniRef9 | UPI000398FA67 |
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| UniRef9 | M0HFV1 |
| UniRef90-E0VLN5 |  |
| UniRef90_UPI0002B4990E |  |
| UniRef90_UPI0002C3FBFA |  |
| UniRef9 | H3CAI9 |
| UniRef90-R6DVN3 |  |
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| UniRef9 | UPI00022B5233 |
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| UniRef90 L8HTU9 |  |
| UniRef90 Q17HE2 |  |
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| UniRef90_R9KKB1 |  |
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| UniRef90-T0L1F6 |  |
| UniRef90_G7J5S4 |  |
| UniRef90_UPI000328C7C0 |  |
| UniRef90_UPI0003EDDC05 |  |
| UniRef90-M3XVV2 |  |
| UniRef90-B4P1A3 |  |
| UniRef90- S4Q008 |  |
| UniRef90_B4NKS9 |  |
| UniRef90 ${ }^{\text {- UPI00038C2835 }}$ |  |
| UniRef90 ${ }^{-}$A0A023EUB7 |  |
| UniRef90-F4MST7 |  |
| UniRef90_G5EE40 |  |
| UniRef90_G2T094 |  |
| UniRef90_Q12Y09 |  |
| UniRef90_R0GQ57 |  |
| UniRef90_UPI0003C35052 |  |
| niRef90-S9XBH6 |  |
| UniRef90-UPI00046B27B1 |  |
| niRef90-M4F4P2 |  |
| UniRef90-F6S1T1 |  |
| UiRef90-V5L0E2 |  |
| IniRef90_A0A023GE28JniRef90 L9KUD8 |  |

$F V N D N N Q F T D N F D K A V N K E Q N G Q S F W Y S P L S \square T Y V L G$ AETKF G A D L F L R N
SNYADFVFRFYKQVISKETDKNVFFSPMSI STAFA


$\square Q Q Q A \square G K \square C D D W F \quad T T S R D K S D V V Y S T H S M F D A F S$ TDFGLKLFS QLSQSLDADKNLAM PYGAVSVIA NVSVEI FKQAASSK KNSMVSP $\square$ SVIMAMG S SYGRFAVELYRRDALDEMDRNLVISPYTVYKAFA $\square A T A N N A F S F D M Y N N L A$ T D GNIVESPYSI FTAMA

 MDFCVRMASQVKDGSNSKNVVLSPLSINMVLN NNQKFALSLYKQLPQPKRGKNLIFSPLGILVPLV MLLHAETTFGLNLLRALPATN T DFCLVLANQVLEDNTNSNIVVSPLSLHVILS
$K G N N G L G L R M Q A L G E Q$



## TEFAFRLYQTVAAGRNGTN VVSPAGVS LPDE LIAPANVDFAFSLYKHLVALTPDKNI FISSPSIS MALA DRNNLFNMYFPQALSKKYKDGNLVSSPASVKTVLT   AMTDFA    $N P L G D S L L Q F S L D L Y K Q L N S$ KS GNIIFYSP

QTRFA R R R A $\square S$ SERAAGNVAFSPLSLHVALS $P D \square S F G D A D F S V Q Y F K Q$ SFNASGNSVVSPLAVRLAFS NSRFEFALDS LKKMVDUDRTGNDFYSPYSLHQA $\square$ M


SAELSESTTSFTCDFFKQVY NPAENVVISPVSTQTSDS AETKFGLDYLNTLSSGN QESLVFSPLSVSLALS
 DALLKEFSYRLF AQNMEEENPVLSPVSAYMALS A DVSLSLASHVITAAKDKNLVISPLSПNVVLG



 AKFALQLF GQLAKSESDRN VLSPSSI RTGLA MVS P A S I K S A L A LYRGQQEFSVSMLDA ПRKATPNENVFFSPYSTYHALL


A QF G TK LLS D $\square T S D Q L T P C V F S P V S I L L S L A$ SYTQFSLNLLRESRKQVQNKNTMVCPLSVMMALE ■ATANNAFAFDMYSMD E SEDENDFFSPYSI FTAMA LYRGQNQVSVTFAKQVDTTSKNSNVIFSPASUNVVLS

TEFALRDYQSVAAGRNGTNFVISPAGVSLPDE EKQNDVVVRLAKHVIDTAEGSNLVFSPTSI NVLL S $K \square R E L D L H F A V R L G Y T L V N M E N R T N L V V S P S S V A S S L G$


UniRef90_F1QV84 UniRef90_D5EX65 UniRef90-D6WWH6 UniRef90_GONEJ4
UniRef90_UPI000398FA67 UniRef90_UPIO0038BCA2C UniRef90_UPI0002C59A7C UniRef90_M0HFV1 UniRef90_E0VLN5 UniRef90_UPI0002B4990E UniRef90_UPI0002C3FBFA UniRef90 H3CAI9 UniRef90_R6DVN3 UniRef90_G7VAT5 UniRef90_Q12V94 UniRef90_-UPI00022B5233 UniRef90_A0A016X284 UniRef90_W4WSJ0 UniRef90_A1Z6R4 UniRef90_W9QQ86 UniRef90_G3V8X9 UniRef90_K7H2T0 UniRef90_W9R5N0 UniRef90_AOA023G901 UniRef90_A4VA01 UniRef90-Q60FS0 UniRef90_V8N336 UniRef90_A9KIC9 UniRef90_P36952 UniRef90_H3C561
UniRef90_UPI0003334019 UniRef90_HOWSZ7 UniRef90_UPI00022CA1B4 UniRef90_B5DQM4 UniRef90-Q8IS49 UniRef90_E3LZK9 UniRef90_Q16Z02 UniRef90_-R7EJW9 UniRef90_J9K2C0 UniRef90_U6NVS2 UniRef90_C0J811 UniRef90_G7J5S6 UniRef90_H9GTT5 UniRef90_E1B2D5 UniRef90_Q8WQX0 UniRef90_E2ALG2 UniRef90_P06293
UniRef90 A7LBB8 UniRef90_UPI000258EF1C UniRef90_Q8TKL5 UniRef90_A4FV69 UniRef90-G1SZH3 UniRef90_L8HTU9 UniRef90_Q17HE2 UniRef90-A8X215 UniRef90_V4L5E2 UniRef90_R5FUN4 UniRef90_R9KKB1 UniRef90_A0A022QBP2 UniRef90-A0A022Q9L3 UniRef90_G1U394 UniRef90_W5UKJ1 UniRef90-U2JUR4 UniRef90-T1PG71 UniRef90-G7KVX0 UniRef90_W4CTH3 UniRef90_UPI0003BBE46A UniRef90-T0L1F6 UniRef90_G7J5S4 UniRef90_UPI000328C7C0 UniRef90_UPI0003EDDC05 UniRef90-M3XVV2 UniRef90_B4P1A3 UniRef90_S4Q008 UniRef90_B4NKS9 UniRef90_UPI00038C2835 UniRef90_A0A023EUB7 UniRef90_F4MST7 UniRef90_G5EE40 UniRef90_G2T094 UniRef90_Q12Y09 UniRef90_R0GQ57
UniRef90_UPI0003C35052 UniRef90-S9XBH6 UniRef90_UPI00046B27B1 UniRef90_M4F4P2 UniRef90-F6S1T1 UniRef90-V5L0E2 UniRef90_A0A023GE28 UniRef90_L9KUD8
$M V N D A A T G Q T E Q E L E Q V M G F H Q G G \square K A V N D Y C K P K V D D K V$ AL Y L G S S G K T A E E I R T V F H L P P




LLY LGGSQGATQKE ISEVFGFSA DPADKSNLVSPKYSKNTV $M A Q L G A A G K T L R A L D S A M G Y S M S R Q Q R L L Q R D L S S E E G V E$ $M V E N G A A G D T K T Q M E K T F G M K T D D M N V W W S A A Q E S K S ~ D N R$ $M A Y A G A S G A T R E E D K R V M G F G E D S C V L P A R A G R G V E E G V$

## I

 HLA LGA QNQTLRRSLQKVLHADLGPCLPHLLSHMCQHDGP $M V E A G A K G K T K D Q U N K V I$ SNGATVREVVEFYSDNNGVQTK SLVVEGTGGRTRHELDEYIDRRDAERSLI PDKSQQNGTEDD LAFMGASGSTAEELRNGLQLGPGDRHHIALNFGEFWRTSC $M L A S G S S G G K T S E Q F L H D V R H R K G L L S V P N K R Q G K A P V F N$ $L V A A A S K G H T L D E Q L L D F S H M F N L T S L D D H E E S E V L D A G D H$



LA Q|VGAKGDTANEIGQVLHFENVIDVPFGFQTVTSDVNKLL
$\square L Q F G A Q G N T D R Q Y D P K \nabla R E F L H A \square Y S V L H N S S Q D T G M E L$ ML S L G T WGHTRT QMAEAEDHQSFQHLHHLLEESATSLEMT MLMEGANGNTKSEPKGKSRRRELAQRILASLNRNENGTE $\square$ LL Y E GASGATY E QLRRAA R $\backslash N V E D E N L R A V Y Q V W S T Y L N T$
 L L F L T HLDSTTAQELSQQLAGNSLKAFDDHNSQVFQSIKTK LAYF GARAETEKMLRNGLEGDHWEDKPVVWQAYNGGKK S L
 $M$ M $V$ V G S K G S T R F E I ERVVFNSVE GYY A R LIFNR I EN R WGH G A LLA EGGSSGDTFMELLDALQLDPNDLAATMQTLHLAAR GIFK S
 $T V Y$ L G T K G R T A E Q I A K VF HF D K A G GI E T M Q NQP S K H F L L R


MFYPFAGSKVAPVMQQCLY LPADKNHATTNNAKTTAGTST LVHS GAKGESRAEIEKVDSESFVKYYSNLSKSLKTAENET LIAA GSNCIAKEGLLPFLMLPSSDHVTHSNGSKRSNVRFS MCANGA GGITK K E MEKVLGLDMDAL NLYCANLYSRDNENK $M A G L G A E N N T K A E F A S V V G D D M A G I C N G D M T T Y P I S T K N S$ $M V A A G S N D P T R D Q L L I N S F S S K L A T H V F A D G E P L G G P R L S$ LVAS GSNGPARNQILGYLKSKSIMSHVFADGARLGGPRLS
 MTAAGANGQTQKKE LSS YL KA DNKEK L GQDDGTMYRWF Y VN


1 IF NGAK GETNEKLKDIDDNCTKNDDCDIVNKDNYVVVNS

$M L S L G T R S T T L T N L L K G L G F D L K V M R V W D M H H G F Q S \| V Q M$ LA Y L G A E G S TADE L KL GL GLLE GA GKNEVAEK LA QLLAK G Q MI L EAAS GSTETEI LDRLSPYKDELDREQLNLYGASSLNANTP LAAYF GAT GETE QQLQQK LRLLNWAKNK E EVVRSAYTVIEDKMP


L V H L G A K GHT R H D $\square$ R N S VVN GS T DE QF $\square E H F S F \| N K L L N S$ MARTGADGDTKQQMGAVLYPGMSAEDGSMVLGRICKSLPD
 I 1 A A GSTGATK D Q L L S F L K F S S V D Q L NAF S S S G D G G P K L S LAYFGADGKTEEQWAKNKKHVNNGYRLEKQMRYSRTKKMP
$I L Q F G A E G S T G R Q L A D A L G Y T V H D Q R V K D V L H A V Y A A L P N$ I I A A G S C A T T K E QL LDS F L M S P STE H L NTVVLTNSERN DLLS L S




UniRef90 F1QV84 UniRef90-D5EX65 UniRef90_D6WWH6 UniRef90-GONEJ4 UniRef90_UPI000398FA67 UniRef90-UPIIO0038BCA2C UniRef90-UP10002C59A7C UniRef90-MOHFV1 UniRef90-EOVLN5 UniRef90-UPIOOO2B4990E UniRef90-UP10002C3FBFA UniRef90- H3CA19 UniRef90-R6DVN3 UniRef90-G7VAT5 UniRef90-Q12V94 UniRef90_UPI00022B5233 UniRef90-A0A016X284 UniRef90-W4WSJO UniRef90-A1Z6R4 UniRef90_W9QQ86 UniRef90-G3V8X9 UniRef90-K7Н2T0 UniRef90-W9R5N0 UniRef90-A0Aо23G901 UniRef90-A4VA01 UniRef90-Q60FS0 UniRef90-V8N336 UniRef90-A9KIC9 UniRef90-P36952 UniRef90-H3C561
UniRef90 UPIOOO3334019 UniRef90-HowsZ7 UniRef90-UPI00022CA1B4 UniRef90-B5DQM4 UniRef90-Q81S49 UniRef90-E3LZKK9 UniRef90-Q16Z02 UniRef90-R7EJW9 UniRef90-J9K2C0 UniRef90_U6NVS2 UniRef90-COJ811 UniRet90-G7J5S66 UniRef90-H9GTT5 UniRef90-E1B2D5
UniRef90 Q8WQ UniRef90- E2ALG2 UniRef90-P06293
UniRef90 A7LBB8 UniRef90-A7LBB8
UniRef90- UPIOOO258EF1C UniRef90-Q8TKL5 UniRef90-A4FV69 UniRef90-G1SZH3 UniRef90-L8HTU9 UniRef90-Q17HE2 UniRef90-A8X215 UniRef90-V4L5E2 UniRef90-R5FUN4 UniRef90-R9KKB1 UniRef90-A0A022QBP2 UniRef90-A0A022Q9L3 UniRef90-G1 U394 UniRef90-W5UKJ1 UniRef90-U2JUR4 UniRet90-T1PG71 UniRef90-G7KVX0 UniRef90-W4CTH3 UniRef90-UPI0003BBE46A UniRef90-TOL1F6 UniRef90-G7J5S4 UniRef90-UP1000328C7C0 UniRef90-UP10003EDDC05 UniRef90-M3XVV2 UniRef90-B4P1A3 UniRef90-S4Q008 UniRet90_B4NKS9 UniRef90-UPIO0038C2835 UniRef90-A0Aо23EUB7 UniRef90-F4MST7 UniRef90-G5EE40 UniRef90-G2T094 UniRef90-Q12Y09 UniRef90-ROGQ57
UniRef90- UPIO003C35052 UniRef90-S9XBH6 UniRef90-UPIOOO46B27B1 UniRef90-M4F4P2 UniRef90-F6S1T1 UniRef90-V5L0E2 UniRef90-A0A023GE28 UniRef90_L9KUD8

TDNDANADFVNKNRGTDQQQYQQDMKQYYDAQAENDDFKD VANRVYFNDNVQDESHYLSCVKENYDAAAELLDFVSTDSA I GNALFTADGNEPQETFLQNTKKFYEAEFFSSNFHEPEEA LMPAEKCGFMDKRVQPEMRFLMQAQRAYNSDVILISGGDY LKQLSREGHLKHKDTLFMDSNRKINTPFLWDTEMVYFRDV GNR पYVSPS SEDLEEFKKKTRENFEVDVKKMNFGVPSSKN
E VVA TWGSKFFTFDDEYTEKMTQDSCKDSTADFEKEAEN TASAAMVERKMSLEKGYRRALVKAFQTHPHQVDFTKPEQA KTKПNDANAFWYNEAAGFKPDAAYKKLLKKSFDAK $\square K G G N$ AA WLQADMPVTDSYLSRLRCDGAEVRRVDFKRDVKGALRH TANALWVRENYPLNERFVGNSKDYYDGKVTNVDFRNEPER GTFRMAARMYLQKGFPDKEEFLEQSEQLFGAKPVNLMGRQ DANAFFMDKKFTDEKPYADTHIKRYSAKVEALDFGQAEQT VATRGWDNPALAASNNYMTALKTYYGTDLQQLNFGNTNNA LVNALWVDHRYPLIHSYKEITNTIYKAQVKNVDLVHEAEQ LLHTKNCGDYDKTLKPAKTFVKLANSSYNSNVVLISFGNY DGNTEDFRFHAANRLFVGKEYKIKNNYTGAENLDFKSNE LLLSFVYGAWDDRRFNLKPSFERLVKDHYND DD RATALDHEGAPFNASYYREGNQLFDASLATVQFAEGXGGE
RELSSANRIFVDRTINVSNKNTLLYGATKELDFKNDPET MELSSANRTFVDRTDNVSNKFNTLLYGATKELDFKNDPET KTHSEKDYKLDDGQTDFLKFGDKDKEFYEAEVQTYKFQEP

TCTVFVQVGTRLSPCFVEQ TSWWANSS DQPVDDREPNSTA MGNALFFDHSLELLETFLTDMRHFYDSEALATDFQEWDRA ALTTRLWDHENLRVSNNYKNDLRSRYQGDIESVNFMESQS KTATVEVASLQAVYTDKALPVKSAYRDVVKNYNVQPVEVD ETANKVYVMEGYTLKPTFKEVATNKFDAGAENLNFAQNAE QDNYEIKVGTKVFSRPNFVVNPNYLSLVKELYDSGVGRDD AARFSQSGDDQFTSVDKLFCMEDKFFEEIEKLDFEKDADG RQLKNADSVWFRKGADDVKKDFLQTNADWYGAGVYSAPFD TANAVFTDMAFVLRNDYVDKVRVYLNAEVKSLDFAGNPEK SSRIFNRFFLNKRADVEMEYEASMLSFYNAKVDRMDFGTA TSRDLGLKGQSVMLSDCSLEDHPEFCELANLYSTDDYTVD SVHQLYGDRSVPFQTEYVRSMKAYYNTEPQTVNFQGAADE TLLGQSAMFSDCSLEDHPEFCRSANLCSTDVYSVDPSNTT

FANGTFVDAS $\square S G K P S F E E L A V C Q Y K A K T Q S V D F Q H K T \square E$ SRFLNVSFQSEGQLSQELEDAARADFRVKPRTVVFANRRA SANRLWISDTRKLEECMLDNVFNEQLERTDFRTNPSA TANALWVQEGYPVKETYIHNVQKYYDGEVTNDDFAGKPDA SSFYSLKLIKRLYVEKSLNSTKRPYAKEMETVDFKDKLEE TANKFYGEKTFPFLQEYLDDUNYYLANAESVDFANAAEE

FKMLSKVYHVDANDKPQVAPDFKETFGAEDDVADFHDQAK EVCVANRVFLRNTVQDNKEYLTEDAENYNAGAESDDDENP AAYGVWIDKSVSFKPSYEDLLDNSYNATCTQADFAFKPGE QLEEYLSTSNALWYNDAYGIMPKKNFLDVNALYYGVDLYK TVALANSAWDSENYAVSDDWLSDUNAVMHSEVFQKDLTAP TANGVWIDQSLRLKPAFKETVENSYKAASNHVDFQTKADE MANGVWIDQSLRLKPVFEEVVENSYKAAADHVDFQTKADE $L A C T L F V Q A G T P L S P C F V E Q V S W W A N S S L E P G D L R E P N G A$
$S L L I T A N M F F N P E L K L H E A F I S Q S K E F Y D S V P K K L T T D S A ~$ TKSDFNLSNSLWLDNKVPWKYLEDLK QYYFASLHHGNLAT

 FVNGVWVEQSLTFQHSFKETVATDFKSNTASVDFVNKAFE

LK Q $\square$ NREGHDKYRNMDFDDSNKDNTPF DWDTERDYDVKA WEETSGDKVGPKLKYANRDFVAQRFQLAQAYQDNFAQSAD GVKLQNSNSVF ISNRLRLRKDFEQTARNAYFADLVPVDFS LVFKSADRLFFNKDITLANCLENRLSEETAQMDFSSHPDE

SVNDVETLDANRDFVSPEQATRKAFHYNAETATDDFKKSQ AEGARFHMSDSVWVKTADDVFVPDENFDDTVKTAYDAEVF TANALWIRKNYPLNEQFAHNLKIYYDGNVTNVDFRNEPEK VANGAWIDKSLSFKPSFKKLLEDSYRAASNQADFQLKAVE LEFSAADRDYFDKSTNLAACMQENFQDELESLDFRNKAEE WQEYMDNVKKLYLASVESADFANAPEE SADVELACSLFVQAGTPLSPCFVEQVSWWANSSLEPADLT TANGAWUDKSLPQKLSFKELLENSYKATCSQQDFFNKPAD MACALF:QTGTTFSPRFDQYAALWANSSLQLANFSEPGMT


## UniRef90 F1QV84

 UniRef90_D5EX65 UniRef90_D6WWH6 UniRef90-GONEJ4 UniRef90_UPI000398FA67 UniRef90_UP100038BCA2C UniRef90_UPI0002C59A7C UniRef90-M0HFV1 UniRef90-EOVLN5 UniRef90_UPI0002B4990E UniRef90-UPIO002C3FBFA UniRef90 H3CAI9 UniRef90-R6DVN3 UniRef90-G7VAT5 UniRef90-Q12V94 UniRef90_UPI00022B5233 UniRef90-A0A016X284 UniRef90-W4WSJ0 UniRef90-A1Z6R4 UniRef90_W9QQ86 UniRef90-G3V8X9 UniRef90-K7H2T0 UniRef90_W9R5N0 UniRef90-A0A023G901 UniRef90_A4VA01 UniRef90_Q60FS0 UniRef90_V8N336 UniRef90-A9KIC9 UniRef90-P36952 UniRef90-H3C561 UniRef90-UPIO003334019 UniRef90-HOWSZ7 UniRef90-UPI00022CA1B4 UniRef90-B5DQM4 UniRef90_Q8IS49 UniRef90-E3LZK9 UniRef90_U5EW77UniRef90_Q16Z02 UniRef90_R7EJW9 UniRef90-J9K2C0 UniRef90-U6NVS2 UniRef90_C0J811 UniRef90_G7J5S6 UniRef90_H9GTT5 UniRef9O-E1B2D5
UniRef9O Q8WQX0 UniRef90-E2ALG2 UniRef90-P06293
UniRef90 A7LBB8 UniRef90-A7LBB8
UniRef90_UPI000258EF1C UniRef90_Q8TKL5 UniRef90-A4FV69 UniRef90_G1SZH3 UniRef90_L8HTU9 UniRef90-Q17HE2 UniRef90-A8X215 UniRef90_V4L5E2 UniRef90_R5FUN4 UniRef90-R9KKB1 UniRef90-A0A022QBP2 UniRef90-A0A022Q9L3 UniRef90_G1U394 UniRef90-W5UKJ1 UniRef90-U2JUR4 UniRef90-T1PG71 UniRef90-G7KVXO UniRef90-UPI0003BBE46A UniRef90-TOL1F6 UniRef90-G7J5S4 UniRef90_UPIO00328C7C0 UniRef90-UPIO003EDDC05 UniRef90-M3XVV2 UniRef90-B4P1A3 UniRef90_S4Q008 UniRef90-B4NKS9 UniRef90_UPI00038C2835 UniRef90-A0A023EUB7 UniRef90-F4MST7 UniRef90-G5EE40 UniRef90_G2T094 UniRef90-Q12Y09 UniRef90_ROGQ57
UniRef90_UPIO003C35052 UniRef90-S9XBH6 UniRef90_UPI00046B27B1 UniRef90-M4F4P2 UniRef90-F6S1T1 UniRef90-V5LOE2 UniRef90_AOAO23GE28 UniRef90_L9KUD8 PST LKT DNDWASDHTNGM DPT ILDK DDEKVVTYYLNAIYF
 $K K Q \square N K Y V E E K T K G K \square P E L I G H L D P S T V L V L V N Y I V F K A T$ ELAQKQ NSADRDRTRGKVKRLLRDLKPLSNLLLANYNFF KHTKKQUNHFVAEKMHKGTKRFITS LANPHTFGELADNYVFF
 TRQETNAFVAQKTQNLIKDLIPSGVINATTVAVLVNAIYYF $V N \square$ NE WVSDHTAGAUPDFLASGSLTDETRLVLLNALSF FDDATVNQUNKWVDKQTDGMUKKDRLNPSDMTVLANAVAF IN KWI EERTRGGVKGGIPEDYPVGWVPHAVLVSTDFFNGS E D DVVANDNQWVKEVTEGKDENFDSELSEDTVLLLDNAIHF
 ATRFI NDWVEQETEHKI TNLLQSDAVNNETSALLDNVLYF VKKEVNSWAAKETKGLI KEIVPQQSKLSPP LCLANALYF
 AVDEINSWAEKATKGLVTKLLPYDSVNCDTALVLANALYF VVKEVNEWASKKTRGRIPQFLEEVPEDSTKMLVLNAMYFK


 (PDTVMMLINYDFF
GRASEDTSSQSTGEGPGRLP WEQVSTMSAQLALVSTMTFQ SRQDNEYVQNKTQGK UVNLFSELNSPANLILINYIFFKGT TARHINEWVRRVTHNTISSALLLNDDPPDTRLILTSVIVYF F Y S PNTVHQ N E A SNRTTRGLI PYTVLPQD MMFLLS SL F F


 EVSEINKWAEHKTDGK

 VRKEINAWVEHQTEGKIKNLLNEGSLNSLTQLI LVNALYF KLA GDIN Y Y I C T A TEGKII NAVKPQNLDNLRMVLVDALYF VRQVNAWVEQATQSKMKDLLPPGSVDDMTTSILVNAIYF AVGQVNSWVEQVTTGLIKQLLPPGSVDNTTKLELGNALYF VRDRINQWVSNVTRGHIVDLLSDDSISENTDDVLANAVYF SRDTINEWVEARTNDKIKDLVPEDAITADARLIITNAVYF T K GQUN SRKHI NTWVAEKTEGKI RDLDSANSVYPMTCLVLVNAIYF VAAMVNSWVESQTNGK
 AIVDDMNAWISEKTNGMIEKMVEKPLKDSTGLVLFNTVYF VREEVNAWAEKETNGLIKDLLQPGSVDAFTRLIFANAVYF VRKEVNAWAEKQTKGLIKEEVLPRGSVDSDTRLI FANAVYF


 NFMKFDLDK DQEFLNT\NESTAVSTNNPSTVLVLVNAYYG


 TAKRDNFWVEEQTHQQITKDLIGPDSVDADTAAILVNAIYF NSQSAADTVNKWVNQRIPQUVEATDI NPTSDALISNALYF SR IIA DN NWI ANVTENEIRETLAEGDIDSRTQVVLANAAYF HATSFKNYRVMEKKTGGKDKTFFEGMKMHSVLILANYDFF MFNSSAETASKDNEWCSKKDLVNEELDEDSVMVIVNALG L EAAK $\square$ MNQF $\square$ SESTKGK $\square P D M \square K P D N D K D V D A D L I N A A F F$ GAPFDETTCRD DNRLVEQETDGMDTEILDQVMYLVNAVAF SKDIINEWVSTNTNGKIKDIISDEMIDPNTAI IITNAI YF VI AEEVNSWAEKETNGLI TEVLPEGSADSMTKLIFANALYF
 EPNGTTDQASEGTSRQTTGEAPPWEQVSAAFAQLVTMSFQ
 ATQ\|NQWVSSNTGGGUQPLVPCDEFGPVFPQIALVSTMYF A A AKAlNDWVANLTQGRITBLVHQDDLENVVVMILNTLYF
AAADVNSWVRDMTEDRIPEII EKPDPSSAPMLVLNAVYFK

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 UniRef90-D5EX65 UniRef90_D6WWH6 UniRef90 G0NEJ4 UniRef90 UPI000398FA67 UniRef90_UPI00038BCA2C UniRef90_UPI0002C59A7C UniRef90_M0HFV1 UniRef90 E0VLN5 UniRef90_UPI0002B4990E UniRef90_UPI0002C3FBFA UniRef90-H3CAI9 UniRef90_R6DVN3 UniRef90_G7VAT5 UniRef90_Q12V94 UniRef90-UPI00022B5233 UniRef90_A0A016X284 UniRef90_W4WSJ0 UniRef90-A1Z6R4 UniRef90-W9QQ86 UniRef90_G3V8X9 UniRef90_K7H2T0 UniRef90_W9R5N0 UniRef90_A0A023G901 UniRef90-A4VA01 UniRef90-Q60FS0 UniRef90_V8N336 UniRef90_A9KIC9 UniRef90_P36952 UniRef90_H3C561 UniRef90_UPI0003334019 UniRef90-HOWSZ7 UniRef90_B5DQM4 UniRef90_Q8IS49 UniRef90_E3LZK9 UniRef90_U5EW77 UniRef90-Q16Z02UniRef90-R7EJW9 UniRef90-J9K2C0 UniRef90_U6NVS2 UniRef90_C0J8I1 UniRef90_G7J5S6 UniRef90_H9GTT5 UniRef90_E1B2D5 UniRef90_Q8WQX0 UniRef90_E2ALG2 UniRef90_P06293
UniRef90 A7LBB8 UniRef90_UPI000258EF1C UniRef90_Q8TKL5 UniRef90_A4FV69 UniRef90-G1SZH3 UniRef90_L8HTU9 UniRef90_Q17HE2 UniRef90_A8X215 UniRef90_V4L5E2 UniRef90_R5FUN4 UniRef90_R9KKB1 UniRef90_A0A022QBP2 UniRef90_A0A022Q9L3 UniRef90_G1U394 UniRef90_W5UKJ1 UniRef90_U2JUR4 UniRef90-T1PG71 UniRef90-G7KVX0 UniRef90_W4CTH3 UniRef90_UPI0003BBE46A UniRef90-TOL1F6
UniRef90 G7J5S4 UniRef90_UPI000328C7C0 UniRef90_UPI0003EDDC05 UniRef90-M3XVV2 UniRef90-B4P1A3 UniRef90_S4Q008 UniRef90_B4NKS9 UniRef90_UPI00038C2835 UniRef90_A0A023EUB7 UniRef90_F4MST7 UniRef90_G5EE40 UniRef90_G2T094 UniRef90_Q12Y09 UniRef90_R0GQ57
UniRef90_UPI0003C35052 UniRef90_S9XBH6 UniRef90_UPI00046B27B1 UniRef90_M4F4P2 UniRef90-F6S1T1 UniRef90-V5L0E2 UniRef90_A0A023GE28
UniRef90_L9KUD8

K GTVNK P FNPETTSESTFH\|VDKPVQMLHQYERLKVYYDA
 GNWDQQFSVSSTRKQTFYNHGKQQVSVVDMFASARSVNYG K GKWDDSFSPDSTADREFTTKDGGVKKDPFLTEMMCDRGY WENSFDPLRTYEDDFFVNTNASVRVNMMQRDSNYDSYYDQ K GKWKYRFNPK LT EMRYFSVVGEGVQTMVPMMQWFHLQHFT K G $\square$ WK MAFHTNNMKE DFFVVDERTTVVQVDMMWKKE HMUY S R MANWEHKFDPKKTQDGTFTALDGSESTVPMMQQDLRTNYA K GNWMRSFKKTKTSTGNFEKFPGEQMETEFMSQRDKYHAD WEKPFDPKYTKMSKFFADGSKVVEVPMMF GMGLFKHGYDE
 QALWKVPFDPKQTAERMFHCANGSVVPVHMMTLTNYFHYG QDKWAEPYEKF QVKKENFTGLENGKKKKMNMMYSTEDTFGR WWP ES F VRVGKA EF G GVGPV E Y M S L S LG S C S D P S L R G R A S K GK WL L E F DVVET QKELFYNSSSNE EGTP DDMMYTKQYFS QSFWRNKFDPS LT QQEPFHDDEQFTVPVDMMQAHAYP LRW
 K G R W L K S F D K D R CF Y VP Q NGC Q D L M M E N S S K Y R Y G N K GK WQK P F MPETT DDHFHVDRDTHVQVNMMYQEDKFRFAE K G D WVVSP F D T K V V T R D E D F HN GK T T K V P F M S E Y Y K Y R Q Y G S KGKWKYPFNRKHTRMRYFWLEDGTKTLVPMMQWFQQQYFS GVWEKEFGGYSTFMETFVAGEEKVQRWFMHAFACHRTFAW KAKWEKKFDASRTQARNFHLLNGQIVQAPFMTTDYHLYKC GDWKTKFDPEFTDNNVFRNYDGTDARVPIMFDIDTHNFAH K G Q W L S Q F K V E E T A L K P F F $\square$ N E REQE MVYMMMKTYRT
 DAR WK NVYTKNNDFT GEFTAWNGTKSNV EMMNSNESDY DK VGKWMKKFSESETKECPFRVNKTDTKPVQMMNMEATECMS K GEWEKP F NGNLT RKMDFHVDNVPVDMMMRTGRFDYYGDL STWQRRTSSSVDSQLLDPFTCAHGLVLQQVPMMHQMAEVNYGQQ WTQPFDPNSTRE ENFYVNETTVVMKVPMMFQSRPDRYLRDS K GQWKFPFNQSATRMEPFYNENDEVITNDPMMVQEANFSY
 KAKWRNPFYPQSTSKRTFYSSAASKREDDFMHARKDVRKY K GK WL H QFEEFLT QRSTHYTSSTKNTETYFMTTTEYFFYH K GT WQTE FKPE QTKK DFYVSS ERQEF VDMMHVLGTFSHAA D A K WE EKYEN S D
R N A WK N Q F T T GE WKFKFDKS SNSK GTFYS SEGKEREVEYMNGSNQE LGH KANWKYPFDPT QTKE EAFYNS QGQVVGSVNMMYHKAPHNL K GA WH QPFDSETKDY DFHLLD GSSFKVPFKTSRESQF ISV K GNWSKT FKREDTTEKPFRLLNKNTKMMFQHNDFNWNYIKE KANWTHPFDPTHTKQADFQNSQGRTDGRVNMMYHKAPHRH K G L WNS QFDPKSTHQSDKKNKKE DDMMYQKNDYKMGRSEE K GNWAHKFDPDNTVDRPFHKNANPEPSPVPTMYRKGNYKY K GA WD QKFDESNTKCDFHLLDDGSS DQTQFMSSTKK QY DS S
 NGKWMYE F DKEMT GKKS FYP TKEED ISSVDMMYTCNRMNYG VGKWMKKFPESETKECPFRDNQTEDKPVQMMNMEATECMG K GE WDEKFNKEKTKEDKFWLNKNTSKPVQMMKQRNHFNFA $K G N W D K Q F Y K V H T K E R P F Q V Q K P V Q M M F R K S T F K M T Y D A E$ K GQWNQKFKEEHKFWLNKDTSKPVRMMKQTNSFKFVSLED NASWEVPFNAADTESMTFHFVNGDHPVDMMFKQEQVLYAN K GK WD E E F EMMDLT S P REFTLKS GELLMADP F LREME T DRLY K GA WS NNFDA WLTTK Y Y FHLLDDGSSVKVPYMTNDEDQYSG E S R WA QA G GYNRTNVD FT DSDGRTKSVSGFYSTGYSYGKS K A K WEEPPFKKY SVYPD QF FMED GK E I EA E L M H K E S E MEYG K GA W W E F K A S S T R D H N F F L L N G S S V K A P F M K S S E E Q Y lis
 GKWKGTFEVVKDGEFTTFSGEVLSVVPILVSLNFNDVTGYIH

 GAWRDVFEEQATKQADFYPPDGPAVQVMMMKRSGMFEYAA K GQWNEKFDPKKTEQQFWLNKDTSKLVQMMKQSNMFKFAS K G LDWDQKFRNETKDENFFTGKKMDDV EMMHKKCKFNYYEN

 K G I WE MAFHTN FMHKE DFFVVDECTTVVRVDMMWKKERMMYS KADWQTS FPDYATYSDFVNHGGRKVSVDTMSQEGYFRFGE K GLWK H A F NPKYTRAGCFHVDNACQNAVIMELHDDMNYGF K GQWQSKFDSKTEQMPFYTSSKKMS LVVMMRQKGNFALTT K GK WK YR F DP K DT R DMP F S V S K E L S V PVPMMMQWFQLQYFR

 D A E WETP Y DES Q DQDATFYAE DGSGQEVSMMYDTTYRY LT K GK WI NE F D $\square E N T$ QKELLFYNSSSNDEGTLIDMMYTRQYFN
 K GQWH QKFKE ENTVKEKFWLSKDTSKSVQMMKETNTTFNFT GTWRKRFSSTDTQLLPFTCAHGLILQVPMMHQMAEVNYGQ




## UniRef90 F1QV84

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UniRef90_Q12V94 UniRef90_UPI00022B5233 UniRef90_A0A016X284 UniRef90_W4WSJ0 UniRef90_A1Z6R4 UniRef90_W9QQ86 UniRef90_G3V8X9 UniRef90_K7H2T0 UniRef90_W9R5N0 UniRef90_AOA023G901 UniRef90-A4VA01 UniRef90-Q60FS0 UniRef90_V8N336 UniRef90_A9KIC9 UniRef90_P36952 UniRef90-H3C561 UniRef90_UPIO003334019 UniRef90-HOWSZ7 UniRef90_UPI00022CA1B4 UniRef90_B5DQM4 UniRef90_Q8IS49 UniRef90_E3LZK9 UniRef90_U5EW77
UniRef90_Q16Z02 UniRef90_-R7EJW9 UniRef90_J9K2C0 UniRef90_U6NVS2 UniRef90_C0J8I1 UniRef90_G7J5S6 UniRef90_H9GTT5 UniRef90-E1B2D5
UniRef90 Q8WQX0 UniRef90 E2ALG2 UniRef90-P06293
UniRef90-A7LBB8 UniRef90_UPI000258EF1C UniRef90_Q8TKL5 UniRef90_A4FV69 UniRef90-G1SZH3 UniRef90_L8HTU9 UniRef90_Q17HE2 UniRef90-A8X215 UniRef90_V4L5E2 UniRef90_R5FUN4 UniRef90_R9KKB1 UniRef90_A0A022QBP2 UniRef90-A0A022Q9L3 UniRef90_G1U394 UniRef90_W5UKJ1 UniRef90_U2JUR4 UniRef90_T1PG71 UniRef90-G7KVX0 UniRef90_W4CTH3 UniRef90_UPI0003BBE46A UniRef90-TOL1F6
UniRef90 G7J5S4 UniRef90_UPI000328C7C0 UniRef90_UPI0003EDDC05 UniRef90-M3XVV2 UniRef90_B4P1A3 UniRef90_S4Q008 UniRef90-B4NKS9 UniRef90-UPI00038C2835 UniRef90_A0A023EUB7 UniRef90_F4MST7 UniRef90_G5EE40 UniRef90_G2T094 UniRef90_Q12Y09 UniRef90_R0GQ57
UniRef90_UPI0003C35052 UniRef90_-S9XBH6 UniRef90_UPI00046B27B1 UniRef90_M4F4P2 UniRef90-F6S1T1 UniRef90-V5L0E2 UniRef90_A0A023GE28
UniRef90-9KUD8



CA1B4
58EF1C
-
QBP2


ELSSTKLCLDYNDSFCMFLSVPDVHDLEMTISRQHIENWR

 D L S C EVVVELLP Y Q GTAARA LL ILPDDDGKM K QVED K E TVVCK WD


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DENALGC $\quad$ KKNYQNDHYSFVTLLPNEDY DSSLTGEHLLS $\square$ $\square$ CKK IIELPFQNKHLSMFILLDKDVEDESTGLEK I QWT NP DNHS SVI MLLPYKGNTSMMI I LIPSEGGKMEHVISSKE Q




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 $D Q N M Q L E M P Y K G R H F S M T I V L P Y A N R S L D K L V E S L T D Q N L$


 DGFKVLGG P Y LQQRQFSMYFYLPDANN GLIVSTPGFLDDSHD D ENLGGAYVLQQMY LTS H
S LEDMQEIJPYK GEELDSMMLLLPNEVDGLQK LEDKLTWTS S





UniRef90 F1QV84 UniRef90-D5EX65 UniRef90-D6WWH6 UniRef90-G0NEJ4 UniRef90_UPI000398FA67 UniRef90_UP100038BCA2C UniRef90_UPI0002C59A7C UniRef90-M0HFV1 UniRef90-EOVLN5 UniRef90_UPI0002B4990E UniRef90_UPI0002C3FBFA UniRef90-H3CA19 UniRef90-R6DVN3 UniRef90-G7VAT5 UniRef90-Q12V94 UniRef90_UPI00022B5233 UniRef90-A0A016X284 UniRef90-W4WSJ0 UniRef90-A1Z6R4 UniRef90-W9QQ86 UniRef90-G3V8X9 UniRef90-K7H2T0 UniRef90-W9R5N0 UniRef90-A0A023G901 UniRef90-A4VA01 UniRef90-Q60FS0 UniRef90-V8N336 UniRef90-A9KIC9 UniRef90-P36952 UniRef90-H3C561 UniRef90_UPI0003334019 UniRef90-HOWSZ7 UniRef90-UPI00022CA1B4 UniRef90-B5DQM4 UniRef90_Q8IS49 UniRef90-E3LZKM UniRef90_U5EW77
UniRef90_Q16Z02 UniRef90-R7EJW9 UniRef90-J9K2C0 UniRef90-U6NVS2 UniRef90-C0J811 UniRef90_G7J5S6 UniRef90_H9GTT5 UniRef90-E1B2D5 UniRef90-Q8WQX0 UniRef90-E2ALG2 UniRef90-P06293
UniRef90 A7LBB8 UniRef90_A7LBB8
UniRef90 UPI000258EF1C UniRef90_-Q8TKL5 UniRef90-A4FV69 UniRef90-G1SZH3 UniRef90-L8HTU9 UniRef90-Q17HE2 UniRef90-A8X215 UniRef90_V4L5E2 UniRef90-R5FUN4 UniRef90-R9KKB1 UniRef90-A0A022QBP2 UniRef90-A0A022Q9L3 UniRef90_G1U394 UniRef90-W5UKJ1 UniRef90-U2JUR4 UniRef90-T1PG71 UniRef90-G7KVX0 UniRef90-W4CTH3 UniRef90-UPI0003BBE46A UniRef90-TOL1F6 UniRef90-G7J5S4 UniRef90-UPI000328C7C0 UniRef90-UPIO003EDDC05 UniRef90-M3XVV2 UniRef90-B4P1A3 UniRef90_S4Q008 UniRef90-B4NKS9 UniRef90_UPI00038C2835 UniRef90_A0A023EUB7 UniRef90_F4MST7 UniRef90-G5EE40 UniRef90_G2T094 UniRef90-Q12Y09 UniRef90_ROGQ57
UniRef90_UPIO003C35052 UniRef90-S9XBH6 UniRef90-UPIO0046B27B1 UniRef90-M4F4P2 UniRef90-F6S1T1 UniRef90-V5L0E2 UniRef90_A0A023GE28 UniRef90_L9KUD8

250
260
270
280
RDVFEHEVVDUY|V|PKDSLLKTSYS|LKD|ILKGMGMADMFSDKA VDLKLPRFETSSDTDKLTLKGGLVALLQQLGDNLVFNQSL FRDFCPETVNDWPKFRMDSTFNI DKILQQQLGVKDAFDEEK QAAKRTYMNTQISKFTIKKEMTLKESLQSLGITEDFTDQA SKMTSRRDNLQLPKDSISGSYDVRKLFKEMGITELGSGNA

 TYKGVSVVKVRDPKFKLTEKVSLEETMSQLGLKTMFNSDS SKGNI S SVNLYYLPKFTLKYGTYNLKDDLYKMGIMMDLFTDKA A EQYPEKRNVTFPKFSSESSFNMVSQLKTGGGNDAFGDMA A A FLN SGEEAAVHAVMPSEKSEMVSVLVKMGVKDVFSSAD
 NLKSSMESGNEVRIWLPK

 L L L Q PTQFMLKLPKMKFTYDFDVQEHMKVKGLTLPFDPGA QPFPMSKRWLFFPKFSDPVALHLENLKHVNSNDKLFSEHM

 SEMYK GE $\square$ QVY $\square$ PKFK $\square E$ TETDLKEVMSNMGLSSLFEPG $\square$
ENTETANVLAQLPKFKFDYTDEMKDALDDLGLKTSFDSKS STMANAKVKLSIPKFKVEKMIDPKACLENLGLKHDFSEDT NSLFRMSVELMLPKFSISADASLGEVLQEMGVTSAFSDAA








 P D S I V D DV G D F R I P P S F E


ECSTRLLAQTYEREVRVFDPKFKTETKLDKMGLSEPFSNSA $P K Q T V E V G R F Q Q P K F K \| S Y Q F E A S S L L Q R A G L Q Q P F S E A A$


 D MLLAE E EVVEVFLPRFTLE ESYDMECVLRDLGMTDGFMARA $\left.\begin{array}{lllllllllllllllllllllllllllllll}\text { Q N MR } & K & R & Q & V & D & L & Y & L & P & R & F & K & V & E & E & S & Y & D & L & V & P & T & L & R & A & L & G & M & V & D\end{array}\right)$


 R Q R E L Y MV H A MTP C F K F D Y E VQ L S D YF A K N GMP S A F D M W G | $D$ | $G$ | $R$ | $Q$ | $T$ | $G$ | $T$ | $V$ | $N$ | $T$ | $K$ | $L$ | $P$ | $K$ | $F$ | $E$ | $I$ | $E$ | $F$ | $D$ | $K$ | $Q$ | $L$ | $N$ | $E$ | $S$ | $L$ | $I$ | $N$ | $M$ | $G$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $P$ | $L$ | $K$ | $D$ | $A$ | $F$ | $D$ | $F$ | $E$ | $K$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |


 A L C G K T QE EV H GV I H F D Y K S D Y M M T E K IA K K M P L P F S G E A

 R N M S M S HV HV HL PRFKVE QSFDL QVTMKALGMVDAFSSSGD
 $T V I V G D L R D P K F N L A F G L E T S G V L K E L G V V L P F S T G G G T N$ D T MTE D DVVEVLIP QF K L K EK Y E L K S I L K SMGMEDAF S K D Q
 K S S G M R W V S QLSSRRKVVV QLDPKFKFEFHLPLQAALEELGGIKKLIFSPGA P Q MET T NVVRLTMPK F TVD Y S D S MV G P L R N M R I N T L F T K N A

 $M Q L M N G C M P R N K P K F K L D G Q L R L N K V L E E L G I R D A F D A E K$



Q N M WK S QVDLHLPRFKVEETYDLKA L LVALGVVDAFNQKA TSLLRRTRMDVFLPRFKIGNQFNLKSILNSWGVTDLFDPLK P D Y Q
 $D L L Q E R F V D V T L P R F Q F E F S S H L D S V L R D M G V R Q A F E D T A$ A A ALPRRKVDVWLPKFQLQQAYSLKGPLQALGVRDVFSTRD

| UniRef90_F1QV84 |  |
| :---: | :---: |
|  | UniRef90-D5EX65 |
|  | UniRef90-D6WWH6 |
|  | UniRef90-G0NEJ4 |
|  | UniRef90-UPI000398FA67 |
|  | UniRef90-UPI00038BCA2C |
|  | UniRef90-UPI0002C59A7C |
|  | UniRef90-M0HFV1 |
|  | UniRef90-E0VLN5 |
|  | UniRef90-UPI0002B4990E |
|  | UniRef90-UPI0002C3FBFA |
|  | UniRef90-H3CAI9 |
|  | UniRef90-R6DVN3 |
|  | UniRef90-G7VAT5 |
|  | UniRef90-Q12V94 |
|  | UniRef90-UPI00022B5233 |
|  | UniRef90-A0A016X284 |
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|  | UniRef90-W9R5N0 |
|  | UniRef90-A0A023G901 |
|  | UniRef90 A4VA01 |
|  | UniRef90 Q60FS0 |


$N \square G N S S V G N \square F D G E V L H K S Y \square S V D E L G T K A G A V T \| V D M$ SDF SGMSETKGVSNVIHKVCLEITEDGGDS IEVPGARIL DFSGUSQEPKKVSKVSHRAVLDVDETGTKAAASTTUEUM A N LK GI Q D S F Y V S E Al HK AK M E I S E E GTK DFSGII QE GQRLSKVVHKAVLQLDEEGVQASASRVV NLSKMISDSIHVTSILQNVKLEIDEEGTLAATDTEIG ANLSRMSSGLFAKICI HSTKIIVDEQGTTAGAVTAAVL ADFKGSDEMLY DSKVIQKAFIEVN
$D$ GNMGNGIYVNEVFHKALI EVVNSGTTAAAT TNVNVLV KFPHSESDQI FVSKILQKAGI KVDEEGSTAFAATGGII DFTAFSEKEQIGFDEIQKSKIEVNEKGSTAASSTV


 E LP GVSTSPLFVSSTVQNVELEVTEEGTVAAAATDAGL
NFSGDSDVRDK\DKVVQKAFDEVNEEGSEAAAVTG DLS EMVDSS QE: SHVVFHKSFVVVNEEGTEAGAATVAM GFAVFRDHKSMLGALKQSTFVQVDENGTEAAAVTVVG GFLKAGEKPLHLGDAIHRAKI EVTEEGTTAAAAT DFSG $\square$ S DSPLE $I$ SRVIHQAFIDVKEEGTEA
ANLSGMSEHQVVSKVLHKSFVEL
DF IGGSCQPGHLSKVVHKPFVEVTEEGTEAVAASEARI ANFSGMTRDDAVVSKVFFKSSFVEVTEEGTEAAAATGVGVRV



 A IDGKEG YVSGI FQKAFI EVNEKGTEAAAATS

 DFGNMYRMFHYVNSANHKAYVDVSETGSE
 ADFSGMSGSGVISAVVHKAFVEVNEEGTEAAAATGVV



 SLPGMFESGPQVTDILHKVFMSVDEETGTVAAAATSAMVI
TVGDFTNRDISFNDAKHVAK DKVDEEGSTAAAATVLV TFGDFTNRD $\square$ S FNDAKHVAK $\square K V D E E G S T A A A A T V L V$
$K \square S G G \square N S T L A V S T M L Q K A G \prod E V N E K G T L A F A A T E D Q L V$, ANFDGISKNDSVSDVVHKANVEVNEEGSEAAAATGLFMVF
 NFSS SSTRGDSISEVIHQAYIDVN
GLTEMMGKNLSVSNIFHKACLEVNEEGTEAAAASAGVIKL
DFSGMTRKNNVVSKALHKSFVEVNEEGTEAAAATGD ANLKGDQDGFYVSEAIHKAKI EVLEEGTKA
GGLTEMVDSPYVSKILHKSCI EVDEEGTEAAAVSVGVI



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UniRef90-A0A044S6N8 UniRef90-UPI000333E771 UniRef90 W5JJ14 UniRef90-F7G5W4 UniRef90-UPI0002C64CCC
UniRef90 Q6GN71 UniRef90_R0FX46 UniRef90-A1Z6R3 UniRef90_Q005M5 UniRef90 F1L396 UniRef90-T1FYS8 UniRef90-H2LZW0 UniRef90_G6CPJ6 UniRef90-R6D1M5 UniRef90_D3PFS1 UniRef90_B9MVJ6 UniRef90 UPI0003AF5DEA UniRef90-T1E5G4 UniRef90-B4QDS0 UniRef90_B8K255 UniRef90- G1PM26 UniRef90-H3F1N8 UniRef90-H2EF43 UniRef90 K7GEY0 UniRef90-F1L8E6 UniRef90-M1ADU6 UniRef90_UPI00046D8AC5 UniRef90- J3JZ29 UniRef90-UPIOO03440488 UniRef90-15AYK0 UniRef90 UPI00045D89BE UniRef90 R5A8U7 UniRef90-UPI000258F23E UniRef90_H2SGI1 UniRef90 W5UCG0 UniRef90-Q292X1 UniRef90_E9HNH8 UniRef90_D3Z660 UniRef90-R4WL96 UniRef90_UPI0003EDF870 UniRef90_UPI0003C02F0C UniRef90 Q5WPT2 UniRef90-W5LLV2 UniRef90-UPI000371325B UniRef90 R6CK85 UniRef90 Q28500 UniRef90-E9GZM9 UniRef90_F4WI47 UniRef90 UPI00038419E4 UniRef90-A0A023ES14 UniRef90_Q2PQP7 UniRef90-F7AWT6


TEFALDLLR A ASGPAANFVLSPFSLGSSLA
 ASLSASNGSFTVDLLKKLDESYSGKNUFFSSWSISSALA ERQNFFNVEDLONSNTNLLLSPLSFHAALN GNVVVGTSSVKSALM FDWKLLTVLSRKSP NILFSPASLQLVLS NNSHFAFSLYRRMVAANPGKNIVFSPLSFSIRLT LVNGFSDYTFDFYHQASADESDKNIFFSTYSDENALA TEFALHLYHSVAGSRNGANFIISPSTVSMPLE


 NNQKFALSLYTQLPKSKLGKNVIFSPLSITMPLV


EFDWNLSK VVFEENK GNAILSPLSVKLLMS AEFSVRLYHQLQTAGGEENII FSPLSVALALG


MQFSLNFFKKVQSKSASENLFFSPMSTYSALL SLTNARFNFALDSLKETALIESKDNVFFSPHSUHQALVS

PFRGQRNVEFDWK LT K QVFASQK ANTI ISPLSVK LLVV FARNCAEFCVEFFQKLAAGGDKENDIVSPFSVQSCVA



$M D H D G A R G S S R E E D N K S D H D H E V Q H W D V T K T A Q P R G G D F E$ MLLSGAHGETRRQINGSGPYKMLRRLHKTLTSKSNQDTVL TLSFEAGGKSRTQUKKAFFGPKESRLVKNEYDNDTNTVQE $M T A N G A G G T T$
$M A A G L G A R G N T$
$M$ MAALGARGNTLQQQKKEALHMPEDMELLKSAYSDITSVTKS
 ML L A R R M G T T E E G S V V T A K LRVDGKVETFK
MLHDGARGATQKEDTPGEVSMDYSTQETSHADMNSSVQDR ILHDGADNKTNNELDNGLKYKYNFDDLEYDKNDFNDDSUK MTYVGAKGNTATQMAEVLHFKKTTGTGDCLQDPDNCKDED
MTAVGARGDT LDQMLRF LGVGDDDDLNSKF $\square$ NMANVIESN $I L A E A A G G R T R Q Q \| V S T Q I R D V V S H S D S S F K D P K S D T V L Q Q$ I LYEASSGATQNNFEDTLQY TIKKSIREKTRHVSPTSENR $L L A D Q A G P A A C T Q V L E A L G F P L T Q V P G H G V H A R C S Q Q L L A$
$M T W A G A K N N T A D E M A D S L H F I N S R D D T D P F F D G G D A F Q L A N$ MTWAGAKNNTADEMADSLHFDNSRDDTDPFFDGGDAFQLN II KDGTNNSSLKELNDVMGNFRRGNDTSKNVVMDANLLLI MA ASGS G G DTKSQLKKFDNQTYQGYQALIDDHLNDVQYNQV MAASGSGGDTKSQLKKFDNQTTQGYQALIDHLNDVQYNQV
$M A Q L G A A G K T L D A L L K S A M G F S L L A R G M S R Q Q R L L H R D L S S$ LLPGAHGNTKQQLLYNKKGPDKMLRKLHKALTSKANTTF LAFDGASGSTAEELRKSLHGGPGDKAKIARSFGEFWTTNC MLLMGSSGNSYDQLRSALGYHNDANDVDUNGAYKFDMERV LLAFQDKPEARRQVLQGLGFGVTGALDAKAAVQYGKLLSA L $\square Q F G A Q G N T G Q Q L A R A L G Y A \square H D L L N A G Q G T K M E \square A C T L C$
LLFEASASGTLTQHQHYQSREFYKNDFDGLKKKSNDYTVH MVELGGARGSSLQETRQAVGYSNFREDEEGLKSGDEAQYVVR $M V E L G A R G S S L Q E D R Q A V G Y S N F R E D E E F L S G D E A Q Y V V R$
$L A Q R A A R G R T A D E L A A V L G A D Q G E L L H A B A A E V G E E A Q L A$ ILGSGAKGTTAQNLAKALESNSMSTVSDGLNKFYNSNYSD

LA YF GANNRTEDQMDKVGAVQAYKLVKFTRQDMRVAGLVK LAYFGARGTTEDSLKRVQRFYADEKSLNQMRSQGNGSANS

LLYEATGDKTVLEPNGDLNATRSKYRQWLDSALSTHHDYD LAFAGAHGDTAKEDATVLKFTSNKTFQYVLENYKNSELLK
lupas_21
lupas_14
lupas_28
jnet
conf
sol25
sol5



90
100
110
120


FA $\square R$ R A APGHVMTAAYERDCSRYD DTRMKNVDFRNRPD L $\square A N G I F S Q K G F P M E K T F V S T N K A N F Q C E S R Q L D F S N P H A A$ ASEGVRDAMKSFDF $\square$ NKDMK IKNRFFERMKRNNCSRTVAK CAVSLANSAWVRDTFRVEDSFLRACVNYYNAEVYRSAFDG

 LTSANA FYQSALKMGSGFRNLTSTFYQTKLKLLSNNTYQ
 NNDYFNANRAYLDNGDECVTMNFHNA SANKMF D K A FTVVPEYQTRVEKAFGASAENLDFTDGAGA

S NGGPD D S F LNGMWVAYTHE
 $S L L S$ A A CQPHMGSILFVDERQPLAQRFVDIAQNDHGTEVV LVNAVWSNDGYPFLASYLDVLANYDAGVHTADFSGQPDA TRELCNTSHGTEKEACTLFVQARMLLSSCFMEQVSRWVSS
 EDGVETASAVMVERKMSLEKGYRRALVKAFQTHPHQVDFT DANALFPQEGFNDQPNFLNTSRYNYLCDSHALNYSNPQQS NYGDRGPQLKSLNRFYVNET LDELQPEFNVFAWDFFKSKAE
 LATAFF

FGTRIYVDQFVTPRQRYAA\|LEKHYLTDLKVEDFSKAKET LANSLFLQSGVHFNADFLRLMKQYFHAQVETVDGFSSAA IA NTLWASDRITVSESFRAELA GWPGSKVETAPFATDPEG EENSVLK DANSLWMQDNYNFKTSFTKNAAEKFYASSYSVD

YDFD ${ }^{2}$ ANRFYFNEDENDRPCDKD $\square F N E D \square E M \square N F A F Q P A E$ YDYK I ANRFW WT D TK KL RDCMLDFFDDQLQVTDFRTNPVE FCEAFKESCQKFYQADLLEELSFAEDTEE LE DA TKFFVEEYDDVISKYQIISDHYYSATVDKVPFSNPK I ANKDCVQQGKVI KPEYANQVKTHFQAETEKDDFNENEAA


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ARKEDNQWAEEKTHGRVKDVLPTGDADTDTSLLLLCATYA A DEDNK WVKNMTKGHIPSLLKADLLDPAMTRLVAINSIYF FLDFSSNQTADEANSLTNEYVLNEKYFERSKI I LTNVISF SLVTDLNRWVGKETNGLIDSLLEQAPGEATMLYLVNAACF FNQIMND WVLQQTNGKVKELFAPGSDNSDTVNVLVNAMYF VT NEVNTWAENETNGLI KEVLPSGSVDRTTVLI LTNALYF FKESKAA IKLIDNEYVKNKTHGKDEKLFNDHDLILDNYIFF
 MEIDFNKWVESQTNNLIGRDI GPRVLTKBSRLCLVNGDHF SQARKLMNHYDNRETQGKDPTLFDKVNPDTKVILVDY ILL AKCVNDFVKASTNGVIPAMVDARALDGDASALVINATYFK IS NKVNNFIEQKTNGLIKNVINPSDIKKDMILILVNTIFF VRKEINS WAESQTEGKIQNLLPKGAVHANTVLVLVNAIYF DF QLREEVAEDVNDWA TKDILKPKY ITDDTKVLLANALYF VK T I ND WANKCTNGHISSILEPNSVTADTKMVLTTAVYF ATSATINAWASEYTQGAIKRLTEPDDVRDMDMLLANAIHF FLIPFQMDPFASKMTHYEDRKLAQEDTPDTVLILANYIFF SRLVINRWVEDQTNEK DKDLLPEGSULSDTAVVLTNAUYF RLEPANLGEPNCTTVQGNQRASGETWESDAVAFMSSMSFQ KTNHMDPTLVDSVNPETMIEVINA ISMKGSWDSEFDCKNT AAKSINKWI QNVANNASSVIVNSSDLDDNKGLALVSAMY RPEQAVGVINEWVSDHNNTTLMSGSLTDETRLVLLNALSF ADY $\square$ NGWIKNRTKGH DQSLLKPDMLDPLLTRLVVVNSIYF
 LIS F GNHKLAKKQDDQGKVTRLLRNLKPPTHLELTNYNLF ARTE $\square$ NVWVEEKTNNK $\square T D L L P G G S V D S G T R L V L V N A D H F$ EWASGKlKGMGPGDDAGGPTWERGGGGAFAQLALVSTMSF
TQA\|NSWVSNITNEHIKKD LVKEEDVQNSVMLMLNAVYF VAQHINTWVQNHTESKIHDLVSADDFSSVTRITLVNAMYF ARQRINADVEQTTQGLIPELLPEGADHPLTRASLVNAGY L FKKQATADAMAKWDSEQTGGLPTFEPNPDQVLSIINTLYF SNAVMVMVNYIFF SRTRDNQWVEDDTRNKDKDVVTSDTDNANTRIALVNAAYF VRNEINNWVSNMTKGHI RDLLPTNSITADTDLVLANAVYF CRKHI NDWVMEKTDGKISEILGAGTVSPDTKLVLVNAIYF NAAELDNNWVNKTTHGRDSELVTPDGLE GAVITLI NAI YF


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 D A R WET P Y EA S D I R E T F TAA A S G A R Q T A D Y LTT S S E S I Y L S G K G D WL A K F D P $\square$ NTTERDFFVVSEKTVKVPTMFASDDKYAS K GA WN E K F D A S T T K D D D F Y L L N G G S V R V P F M T S K K K Q F V C K A QWKTPFNPHRTYDSEFLVSKDKRVQVPMMTLGLETPYF K T $\square F K$ K K N T DLLE D F Y R P GLD S DK VP M M T S K K Y P V A S Y F D P K GEWS DRFNERDT QEEDF FGSD K P S RVVRMMHVCEKFF FA K K GK WLLTP F DP V V TK A D T F H L N K Y K T V K V P M M Y SA G N F A S T
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 K S E WN FKFDRA DSTMTS KTDSKMVETMMFR GSYKFGNVVGG QAPWKVPFDPKRTAERMFHCANGSTVPVHMMTLTNHYHYG K G M WK S R F P VQNTK K D S F T GG DGK S Y K V P M M S Q WA N T P D G K GK WK K P F TPEVVT Q QD DF F L N LIR D S VKVDMMYQEDKF K Y A NANWADPFTPDVTRREDFHVSSSE LTTPLTMHTHSMVAY $\square$ K GKWKYRFNPKYTGMRNFSLSNGTNI LVPMMQWFQLKYFS K A N WE NK F DMEPFHMTPTETVNDPMMNLRDEKFPYRFSDK QSTWRQRFSSTDT QLLPFTQVPMMYQMAEVNYGQFQDHAG K GNWDTQFNKEHTKERPFNMEKPVQMMFKKSTFKSTY $\square$ G E $R G L W R K P F N R T L P L P F H V S A D E S T T T D F M L T D G L Y Y F Y E E$ R GSWKNQFRPENTMRTSFSKDDGSEVQT LMMMYQQGDFYYG KTAWRHPFAKHATKDADFHMPD GVRRVVPTMHLDESVGYA H EGAWANNFKAENNTTGKFTLADGKQVDVTYMNQEFKSYYE K AKWETSFNHKGTQEQDFYVTPETVVRVPMMSREDQYHYL K GQWASQRKVANTRTSFA INNKEEGVANMMFQKGRFRHAA K G L W W S RF DVKN SKRD DF YTS GT QNSVTMFMRQKGNFNHA K GKWNEQFDRKHTRGMPFKTNQEKKTVQMMFKQAKFKMGH $K G L W T Y P F P E Y T P M L T F H G K Q K Q V Q F M E Q N G Q F Y Y D D S A A$

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 LTILTEDEQDEPPEFKAETTVSLVEPLKKLGVASUFGDNK
$K \square M H M R K \prod R L F D P K F T A D A E V D L E A P L S S G G \square S D T F S Q D K$ EEFDLTEVDVKIPRFKDDTNVVINKALNS MGVYDi FEPGA
 P P K Q V K V D D F R $S$ S Q P R H I D K L S L



 EMMMMS EVVELSSLPRDKLEESYNLKS TLSSMGMKDAFSPGQ



 NNLRRPRIDMFLPDFVLXNHFNLKSIINXTDPFDPLKANLD KYKNENVSLKLPRFKYNYDFNNLKDULDKMGDKS IDFSSA K EGMDDLVQLRLPRETGRSKVTLEDSLKSLGLTDMFENKA QE LDR R VKRQLSMPRFTLNSEVNFKSALLNMGLGDVFNTAD QLMRQGKMRLLLPKFTAEMEMDLKGPLTALGITDIF DGKA GAMTLDDVDI ALPKDTVEFDVDLKNVLNQLGUSEVFGNEA

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ESPSPRK DQLS LPK $\square S \square D \square R A G L D R A D Q G L G V A A L F T P D A$ ESVKYADVNLKLPKFSFDTEFNLNQTCKDLGLNELFTGEA KMFKKRQLELYLPKFSDEGSYQLDKDLPKLGISNVFTSHA RNAMASTFPLTVDVGDPKFRLELLNVLVKMGLTDMFDAAD
EK LTEEKVQVF LPR LK LEASYDLEAF LRS LGMTDAFEEAK WYMDETEVNVTIPKFKFDFSEELNQPLKDIGDRE DFSQNA


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DMTKNNDKDLY ISS INHKSYI EVNEQGTKASAATSASI
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ANDKG $\square Q D G F Y V S E A \square H K A K \square E V S E E G T K A S$
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